THE

SOUTHERN AGRICULTURIST.

JULY, 1835.

PART I.

ORIGINAL COMMUNICATIONS.

On the Benefit derived from the Pea-Crop.

"Woodlands, (Ala.) April 15, 1835.

To the Editor of the Southern Agriculturist.

Dear Sir,—The great benefits derived from the pea-crop in the South, are generally known to planters, but it will be readily granted by those acquainted with Southern Agriculture, that the advantages which a knowledge of this fact might give to them, are but partially experienced, owing to the want of being informed of a *successful* and *ready* mode of *preserving* that valuable plant. In No. 12, for December last, I think this subject is brought forward by one of your writers, and whose remarks has induced me, Sir, to offer to you, and through your truly valuable periodical, the mite of my practical knowledge of the value of the pea, arising from the manner in which I cultivate and preserve it, and also apply it in the feeding and support of stock. And here, I beg leave to suggest an idea, the application of which I have frequently noticed, and not unfrequently felt, viz. that the relative value of any product of planting industry depends in a great degree on a judicious application of it, and a strict adherence to a well timed system of economy. Under a belief in the truth of this remark, I have appropriated my pea-crop exclusively to the support of my milch cows and sheep, and fattening kids. It

aids equally in the production of superior milk and butter during the winter, and fine mutton and lamb—four prominent items in comfortable living. The pea-crop claims a considerable credit from the circumstance of being produced by the same labour that brings to maturity a crop of corn. Another value is fairly claimed by this plant, as an ameliorator of the soil, independent of a valuable product. The pea can be sown or planted after a crop of small grain is taken from the ground. My practice is to cut my rye and oats, what would be called early, or just before they are perfectly ripe, remove the grain from the field, and stack to cure, in some other, and turn in the stubble as soon as possible on peas previously sown —and this course more especially to improve my land, which last would be partially lost by cultivating the peas. This course is adopted also, not only to improve the land but to admit the pea to be put into the ground in good time to secure a heavy crop, and to give greater value to the straw of the oats or rye, and which I stack, or rather house, sometimes the day after cutting, by giving a liberal quantity of salt, sprinkling it over as I stack the last.

When I plant the pea with the corn crop, I put the seed into the ground uniformly, so as to secure one ploughing of the corn to the pea, as also a liberal share of the hoe. As early as the pea reaches maturity, anticipating about the time now admitted, in saving small grain, viz. "just before it is perfectly ripe," while yet the leaf and vine exhibit a growing state, the peas are pulled up, or cut at the ground, with knives made for the purpose of cutting down corn, the cutters returning along the row, cut by them, and gathering into small armsful, raise up the bunch, placing it as upright as it can be made to stand, for the more free admittance of sun and air. If planted among corn, this last has been sometimes removed from the field, by being cut at the ground, saving in this way, stalks, blades, tops and corn. After one day's sun, I turn and raise up the bunches of vine and peas, and if any assurance of the continuance of good weather can be seen, I give them another day. The following I haul in, on a long coupled low-wheel wagon, fixed for the purpose with racks. Satisfied from reason and experience, that open pens are better calculated for the preservation of every kind of straw and vines in our climate, than close buildings, I have pens built of ches-

nut rails, about twelve feet in length, which pens can be removed at pleasure, in them I place a tight floor of jointed plank, moveable if required, and raised about two feet from the ground. On this floor I lay a little well cured and dry wheat, rye, oats, or rice-straw, and on this, pea-vines are put, until the layer, after being pressed down by the weight of a child, will be about twelve inches thick; on this layer salt is scattered—there is no loss by scattering the salt freely, the floor ultimately arresting what passes through in handling and feeding; what goes off with the pea-vines being necessary for the thriving and health of the animals fed—the first going to salt my hogs the next year. The scattering of the salt is followed by straw, peas as before, and salt, until the pen is filled. When the roof of broad and sound clapboards is laid on, and secured by cross-rails, which interlock with the last put on.

In this mode of housing my pea-crop, I consult saving time, convenience and economy. In place of a door, I have three of the rails so fixed on the front side, (or whatever one is most convenient to take out) that they can be moved as bars. The leaves and vines are generally taken out as green and sweet as when housed, and if possible, submitted to the cutting box, and which is found an excellent preparation for the use of the animal feeding on them. This last enables them to fill themselves much sooner. The vines are cut about an inch, and if not steamed, (which is a superior preparation for milch cows) are put into the feeding trough, and sprinkled with a liquid preparation of water, with as much corn or rye-meal in it as will produce the vinous fermentation, and used just as the *àcetous* has commenced.

By pursuing this mode of saving, and using this plant, it will readily occur that an acre gives, when either planted among corn, or sown after grain, a fine quantity of dry winter food, and of a most nutritious character.

The period at which the vines are taken up, makes the pod hold the pea much more tenaciously than if suffered to get perfectly ripe; consequently there is less waste in feeding. A few pigs suffered to run in the cattle or sheep pens, accounts honestly for every pea. If fed in racks, the peas may be fairly credited with the maintainance of one pig for every sheep, and four for each cow, during the time of feeding.

The straw is given out with the vines and eaten with avidity, evidently imbibing so much of the quality of the pea as to become very agreeable to the taste of animals, particularly oxen, to whom I give it frequently. In filling the pen, I place a large keg in the centre, drawnig it up as I progress. This leaves an opening for the escape of any product of fermentation that may arise, as also, for the entrance of atmospheric air.

For a stock of that valuable animal, the sheep, there cannot be a superior winter provision, especially if a few turnips are added, or an hour in the day in a rye-field, with pointed attention to salting.

From a fair trial, I know this mode of feeding that animal, preserves a fine state of flesh, fleece and health, during our short winters. With some, kid is a delicacy, kept on this food along with the sheep, the real "savoury meat" may be had.

CINCINNATUS.

A method recommended to improve worn-out Lands in the Cotton Crops.

"Pendleton, May 29, 1835.

To the Editor of the Southern Agriculturist.

Dear Sir,—Having undertaken in your March number to point out, what I humbly conceive, to be radical defects in the cotton husbandry of the middle and upper country; I promised to suggest a change of system, by which the lands that are impoverished by frequent ploughing, and exposure to the sun, every alternate summer, may be restored, or preserved, without material diminution of the crop intended for market. The plan adopted in the old countries, and introduced into the Middle and Northern States, is too complicated for general use here; but an approach to the rotation system, sanctioned by the experience of ages, is certainly within our reach.

The first requisite for improving land is to diminish the quantity planted in corn and cotton; and to increase that sown with small grain, imported grasses, and improving summer crops; such as the cow-pea, and perhaps guinea corn. On a farm containing 200 acres of land under culture, 100 of which are planted in corn and cotton, and 100 in small grain; averaging about 10 bushels of corn and 50lbs. of cotton to the acre; and from 5 to 7

bushels of small grain; it is proposed to make three shifts or changes; cultivating one-fourth or 50 acres in cotton, one-eighth, 25 acres in corn, 75 acres in wheat, oats and rye, and the remaining 50 in peas, red clover, and any artificial or natural grasses adapted to the soil and climate. These last intended to improve the land by restoring a great portion of the product to the soil in the shape of vegetable manure. The cotton proposed to be planted is the same quantity as under the old plan, and may be estimated to produce larger crops after the first year, as it will grow in a less impoverished soil. The diminished quantity of corn is made up by the increase of pea-vines, straw, small grain, hay and other food for live stock; and by affording them abundance of such food in winter, their number may be increased, and arrangements for manuring extended so far, as to improve one-eighth of the land, or 25 acres, every year from the barn-yard. This process, with the aid of ameliorating or improving crops on double that quantity of land; and avoiding the loss of ploughing to disadvantage, by running all the furrows on a level, will gradually increase the production of our lands, and diminish, proportionably, the necessity of abandoning them. The rotation of crops may be as follows. The land planted in corn and cotton to be cultivated the following year in cow-peas, natural or imported grass, or guinea-corn. As much of these crops as can be spared from consumption should be turned into the ground with a bar-share-plough in September, October or November: and sown with wheat, rye, or oats. The small grain crops are all harvested by the end of July. The stubble field produces an abundant crop of weeds and grass which should be turned in before a frost, with a bar-share-plough, throwing four furrows together for corn and cotton the next spring.

The most important part of a farm-crop is frequently most neglected with us. In Europe, the hay-crop is of the first importance; when taken from the meadows, or low grounds, an abundance of food for quadrupeds is produced with no other labour than mowing, curing, and housing it. There are few farms in our well watered country which have not some low ground bordering on rivers, creeks, branches, or ponds. If these lands are cleared and cultivated for a year or two, in corn, to destroy the natural growth of weeds and shrubs, they pro-

duce abundant crops of natural grass that amply repay the labour of clearing and culture.

Having mentioned red clover, the objections to its use should be stated. The greatest, is the price of seed, averaging from $8 to $10 per bushel, two or three quarts are sufficient to sow one acre. In several instances, in this neighbourhood, it has succeeded perfectly, sown with oats in February or March, better, I think, than when sown with wheat or rye in the fall. It affords excellent pasturage, winter and summer, from the time the grain, with which it is sown, is harvested. It may remain for several years, producing large crops of hay, if not pastured. It is cultivated extensively in North-Carolina, Tennessee and the Western States, both for cattle and swine, the latter feeding on it, green and cured. With a few acres of land in red clover for pasture, and the *Leersia Orizoide*, or rice grass for hay, live stock of every description may be greatly increased, contributing both to the comfort of the farmer, and the improvement of his land.

Having in a former number objected to the use of the shovel and gofer-plough, as injurious to the soil, because they do not turn in the vegetable matter on the surface; and aware, that the expense of purchasing and repairing the bar-share, will prevent their introduction into general use; I will merely add, that the jack-plough which turns the ground partially, may be used on the same stock as the shovel, and at the same cost. I have also heard of a plough used in the neighbourhood of Milledgeville, (Geo.) said to turn the land over better than the jack-plough; it is formed by placing a mould-board on the gofer, using the same stock as formerly.

Your's, respectfully,

C. C. PINCKNEY.

On a Professorship of Agriculture, &c.

[We are induced to publish the following part of a letter, as it in a great measure responds to the sentiments which we have for some time entertained, and in hopes of drawing public attention to the subject.]

"Georgia, (Hancock County,) June 5, 1835.

To the Editor of the Southern Agriculturist.

Dear Sir,—It is a matter of much regret, that the wealthy planters of the South are so dead and insensible to their own interests, as not to patronize a work that is

intended for their own pecuniary benefit. But we shall not be surprised nor astonished at it, if we consider that not one of the Southern States, in their respective Universities, has established a Professorship, for the purpose of instructing the youth in the Science of Agriculture. In fact, there are thousands that have never considered it as a Science, and yet it is as much of a Science as any that are taught in any of our seminaries of learning, it is predicated and stands upon three separate and distinct branches of Science, that is Natural Phylosophy, Botany, and Chemistry, and yet an English education is incomplete without a knowledge of these branches.

But again, Sir, we should not be surprised at the retarded progress of agricultural information, when we reflect that this branch of Science is looked upon as being only fit and suitable for the ignorant and lower classes of mankind, that it is not a suitable subject to be introduced into the higher circles of refined society. I know, Sir, that this remark is subject to some exceptions, but it is much to be lamented, that the talents and learning of the Southern country is not brought to bear upon this inestimable source of wealth. But, Sir, there is another class of men that retards the progress and extended circulation of an agricultural paper, more than any thing which I have enumerated, and it is the middle class, and they are by far the most numerous. This class has come to the conclusion, that no newspaper instruction is needed upon the subject of agriculture, that our fathers taught us the use of the plough and the hoe—that they raised plentyful crops of corn and cotton—they did not teach us horizontal ditches, and horizontal rows to preserve our lands from washing—they accumulated a competency, and we are now enjoying the legacies bequeathed us—why should we become subscribers to a work that professes to teach us something to which we have been raised? These are the replies which I have generally received in attempting to extend the circulation of the *Southern Agriculturist.*

I have been of the opinion, that the raising of the silkworm might be made a source of profit in Georgia. I procured a few of the eggs this spring to make an experiment, and succeeded far beyond my expectation, they having grown large and commenced spinning in thirty days. I

should, therefore, like to procure some of the Chinese mulberry seed, also, the proper time of planting them.

Your's, respectfully,
WILKINS SMITH.

[We regret it is not in our power to comply with this request, but hope others who may have any such seed, will send them to the office of the *Southern Agriculturist.* The Editor will purchase from those who may be disposed to sell.]

Irrigation of Gardens.

"In the south of Spain, no garden is ever formed but in a situation where it can be irrigated; and the water for this purpose is drawn from deep wells by what is called a noria, viz., a kind of water wheel, which is described and figured in *Louden's Encyc. of Agr.* The ground is laid out in small squares, separated by channels for conveying the water. Each square is a level panel, sunk a few inches below the water channel; and at one angle of each panel is a small opening in its bank or border for the admission of the water. On the margin of the squares, garlic is commonly planted. The olive is raised from truncheons of 8 ft. to 10 ft. in length, and from 2 in. to 3 in. in diameter. 'They are sunk about 4 ft. or 5 ft. into the ground; and the part of the truncheon above ground is covered, during the first summer, with a cone of earth or clay, to the height of from 2 ft. to 3 ft..' doubtless to prevent the sun from drying up the sap of the truncheon. Vines, in some places, are trained with single stems to the height of 2 ft. or 3 ft., and then allowed to branch out like gooseberry bushes; they are manured with recent stable dung when it can be got, and the fruit is never found to be injured by it."—*Busby's Journal.*

Colonel Pinckney's house in Pendleton, is at the top of a hill, of about 70 feet elevation, and is at 800 feet, measured superficially, from a spring, which gushes out at the foot of the hill. The rivulet, or as we call it, the spring-branch, falls over one or two rocks at a little distance, but as the quantity of water is small, it is kept back by a little dam furnished with a floodgate self-acting, by means of a float, which lifts the gate as soon as a sufficient head of water is accumulated to act advantageously. The water falls upon a small wheel which sets in operation Hubbard's patent forcing pump; and the spring water is carried through leaden pipes, 18 inches under ground to the top of the hill, and is discharged in the kitchen; from which the surplus is conducted, by proper channels, from level to level, through the garden, on the hill side.

This example ought to be contagious, the only doubt of its utility lies in the use of leaden pipes; the proprietor considers the constant use of them as a sufficient security against the poisonous influence of the lead, but

we know that lately objections have been made to the salubrity of the water conducted into the town of Mobile, through leaden pipes, notwithstanding their constant use; and the Messrs. Fabers, with several workmen, at their country seat, on Pon Pon river, have just recovered from very formidable and repeated spasmodic attacks, brought on by the use of water forced by one of these ingenious contrivances, through leaden pipes from their spring into their buildings. The use of wooden pipes or small iron castings would be free from any risk.

The precautions taken to supply abundant moisture to the cuttings of olive, shew the cause of the failure to propagate the olive by cuttings in this country. In this city and at Mr. John Couper's, on St. Simon's Island, the cuttings have been made to germinate, but after putting forth, the leaves perish and the cuttings become a dry stick under our sun. It is far easier for us to propagate the olive by seedlings, according to Mr. Mey's practice, described in the 6th vol. page 308, and confirmed in page 250, and in vol. 3, page 230 of the Southern Agriculturist.

CONDUCTOR.

Observations on the Stink-weed, (Cassia occidentalis) recently termed the Florida Coffee.

"St. Helena, June 15, 1835.

To the Editor of the Southern Agriculturist.

Dear Sir,—In the last number of the *Southern Agriculturist*, I see a short article upon the Florida Coffee. The writer is perfectly correct in saying that it is nothing more than a useless weed, which grows here abundantly, but he has mistaken the name, supposing him to have purchased the same kind of seed that I did. He calls it the Horse Indigo, *(Baptisia tinctoria,)* the *Sophora tinctoria* of Linnæus. This plant is delineated in Prof. Rafinesque's Medical Flora. The plant which I have hatched on the contrary, is the *Cassia occidentalis*, or Styptic-weed, or as it is very significantly termed in a note to the communication, Stink-weed. It grows more abundantly in the town of Beaufort, than any other locality with which I am acquainted. It may be that Florida beats it in this respect, but if they can send all their seed elsewhere, they will be getting rid of a nuisance, and make a hand-

some profit into the bargain, if the seed maintains its original price. So great was its abundance in the vacant lots in the town of Beaufort, and so offensive its smell, that the inhabitants of that town, in the year 1817, when the bilious fever prevailed to an alarming and deadly extent, conceived the impression that the cause might be owing to this loathsome weed, or at least contributed to it. They, therefore, had them cut up in all parts of the town, but unfortunately neglected removing them. The consequence was, that they became still more offensive. Since then, they have every year cut them down when working the streets, and "thrown them like a loathsome weed away." It is frequently used there as a styptic to fresh cuts, and I have been informed is considered useful for that purpose, but never having tried it myself, cannot say what its properties are in this respect.

I saw some of the prepared coffee in its powdered or ground state, and it had the appearance and the smell of coffee, but not its peculiar aroma. Indeed, there are a thousand things which when charred and ground, will deceive many persons. The Rye thus prepared is used extensively in the Northern States, in the interior, that with long sweetening (molasses) in contradistinction to short, (sugar) forms the principle morning beverage. In Germany, Chiccory is used either alone or combined with coffee, and this not at all confined to the poorer classes, but by many who consider it as giving an additional flavour to the coffee. So, also, in many parts, the roots of the Dandilion, *(Leontodon taraxacum)* is prepared and used in like manner. Indeed, as they are now applying India rubber to so many purposes, I would not be at all surprised if some one should advertise Caoutchouc coffee, as it has already been converted into bread, it can certainly be burnt into an imitation or substitute for coffee; and the same may be said of deal-boards, to all those who may choose to deal in such substitutes, when the *genu-ine* article, as our Northern brethren can assure us, can be procured at a much cheaper rate.

Respectfully, yours,

CHARLES WM. CAPERS, M. D.

Medical Botany of South-Carolina.

To the Editor of the Southern Agriculturist.

Dear Sir,—The obligations which we are under to the aborigines of America for some of the most valuable discoveries of the medicinal properties of many of our indigenous plants, are not sufficiently known or appreciated by us. It is my intention to offer to your readers, through the medium of your most valuable publication, the *Southern Agriculturist*, a series of numbers, pointing out such of those discoveries as have come within my own observation, and which have been tested by me and proved to be invariably efficacious in all the cases in which I have either prescribed it, or used it in my practice. As rheumatism is a prevalent disease in this and several other States in the Union, I take leave to occupy this number, with an account of the Indian Vegetable Specific in the treatment of rheumatism, contraction of the joints, &c.

About fifteen years ago, an industrious young married lady, from her exposure to the morning and evening dews in attending to her cow-pen, was attacked with a violent rheumatism in her arms and legs, the best medical aid that the district at that time afforded, was obtained for her, and for six years their utmost skill was exercised without effect; by this time the fingers of both hands and the toes of both feet were so contracted, and the wrists and ankles so distorted, that she could use neither, nor could she wear shoes; her case was considered desperate, her physicians pronounced her case hopeless, and ceased their further attendance.

Her paroxysms of pain were now very severe, and her cries of distress were heard to a great distance. About this period, a deputation of Indians on their way to Washington, to obtain the provisions made for them by the government, took this district in their rout to the seat of government. Arriving at the boundary of the district, one of their head men observed, this is very poor people, and if we keep together, they will not be able to feed us all, let us divide and take some of the richer districts in our way, and after so many days, let us meet again at a certain rich settlement, where we may travel in a body again. This arrangement was readily acceded to; and it appears as if a kind Providence, directed the wise man or doctor of

the nation to select this poor district as the most direct route for his journey, and to the cabin of the afflicted sufferer; he hailed the house-keeper, and the husband of the lady went to the gate, when the Indian requested him to give him a meal of milk and hominy. The gentleman invited him in, and set before him a meal, such as his straightened circumstances afforded.

While the Indian was enjoying his repast, a paroxysm of severe pain seized the sufferer, and her groans and cries aroused the feelings and attention of the Indian. Turning round, he observed an emaciated female in a bed at the opposite end of the cabin, and inquired of the husband what was the matter with the lady? She has been violently afflicted with the rheumatism this six years, was the reply of the husband, and our doctors can't cure her? O no,—well brother, I will cure her in three days, suppose you let me stay with you so long, and can give me any thing to eat. The husband assented; and as soon as the Indian finished his repast, he arose, went into the woods and collected a sufficient quantity of the herb, with which to effect a cure, returning to the house, he required half a pound of lard or fresh butter, which being furnished him, he prepared his ointment with the herb collected; and on the approach of night, he directed the husband to rub in, on the most affected parts, the size of a large Cherokee plum of the ointment, and that he should rub it until it was all taken up by the pores, then to wrap the parts thus anointed with warm flannel, and to repeat this process night and morning for three days; after rubbing the first time, the lady obtained the first comfortable night's rest which she had experienced for six years: in fact, she fell asleep while her husband was rubbing the ointment on her contracted wrists and elbows; next morning on awaking, she said, "husband, dear husband, see here, my arms and wrists are supple as ever." The case had been of so long standing, that it required nine instead of three days to effect a radical cure of the disease. The Indian conscious of this, told the husband after the expiration of the third day, that as he was one of a number of Indians, on their way to Washington, but who had scattered themselves, and were to meet at a certain time and place to prosecute their journey to Washington, I see it will take more than three days to cure your wife, and as you have treated me kind, giving me milk and hominy,

I will show you the plant, and you can make the ointment and cure her yourself. I assure you it will cure her. The gentleman went and was made acquainted with the plant, and when it was brought to the house, a lady who was a near neighbour of mine, and related to the sufferer, who she was then nursing, on perceiving the happy effect of the remedy, was wise enough to secure a sprig, which she preserved in paper, that she might hereafter recognize the plant by a comparison with the specimen.

In nine days the lady was radically cured, and had got out of bed, and resumed her spinning wheel, to the joy and delight of her husband and friends. They soon after emigrated to the Western country, and from letters received from them at various times, she is said to enjoy perfect health.

The elder Michaux, discovered this plant in his botanical researches in South-Carolina; and finding it as yet a nondescript, he named it *Ceratiola*, and as the species under consideration was of peculiar structure, having the leaves in the terminating axillæ of the branches verticellate, he gave it the specific name of *Ericoides*, *i. e.* Heath like *Ceratiola*. Mr. Elliott followed him in his generic and specific characters. I have named it *Carolina Heath*.

When the family removed to Alabama, their relation, my neighbour, returned home and was kind enough to give me a few green specimens of this invaluable plant; the lamented Mr. Noisette, as soon as I had opened the specimens, immediately recognized them, and pointed to their locality. They are a very hardy evergreen shrub, and were first discovered by Mr. Michaux, on the Sandy Island, near Murphy's Bridge, now M'Ilhenny's Ferry, over Edisto River; it grows plentifully on the Sandy Island above mentioned, and from there on many of the sand ridges between it and Columbia. I have found it since, to flourish on the margins of flat ponds in the District of Orangeburgh, viz. on the margin of Grimes' large Cypress pond, on a small flat Tupelo pond, at the west declivity of the Hygean Ridge, near Young's Cottage, on the Rail-Road, 59 miles from Charleston.

Very respectfully, yours, &c.

MEDICO BOTANICUS.

Hygean Ridge, District of Orangeburgh, May 20, 1835.

General observations on the Olive, Orange and Date Trees growing in Georgia; and the method of cultivating the Ruta Baga Turnip as a second crop after Corn.

"St. Simon's, (Geo.) June 17, 1835.

To the Editor of the Southern Agriculturist.

Dear Sir,—I am unable to excuse myself for not sooner replying to your esteemed letter of the 15th of January. I did intend writing you something on such matters, as had come under my observation, particularly respecting the olive, orange, and dates. The frost of February has destroyed those trees, leaving nothing but stumps and wrecks behind. I shall, however, still make some observations:—

I had a very pretty grove of 200 olives, imported about 10 years since, their stems from 8 to 12 inches diameter, and, perhaps, averaging 20 to 25 feet high to the top; they have borne fruit for some years. I had also near 600 trees, or plants, from 11 to 5 years old. From comparisons between the olive and orange, in previous severe frosts, where the orange was much hurt, the olive was uninjured. I have, therefore, no hesitation in believing the olive is well adapted to, and will succeed on our sea-coast, of both Carolina and Georgia.

I have been personally acquainted with sour-orange trees, both on St. Simon's and Jekyl, for 58 years, and believe they were planted near 100 years since; and have never been killed by frost until last February, when they were all destroyed. I therefore, conclude, that since the first settlement of Georgia, the olive would have succeeded. It occurs to me, that notwithstanding the present immense value of the olive in France, they have been cut down in some severe frosts.

The olive and orange seemed so completely destroyed, even to some depth under ground, that I cut them down, and planted corn in their place; on examination about a month since, the lower roots still appeared fresh, I concluded that opening the ground around them might encourage vegetation; and have now the satisfaction to see the olives pushing out abundance of fine strong shoots, not one failing. The oranges are doing the same, though some appear dead, *not yet decided;* by returning the earth to the olive shoots, they will throw out roots, and furnish

fine plants. In fact, I am better satisfied respecting the success of the olive than I was before the severe frost.

I had little hopes of any date trees surviving—some appear certainly gone, others are sprouting from the roots, some from the tops; a few put out blossoms—so I close the list of my misfortunes in that way.

I like to have some *hobby* in the agricultural line—my present is, raising RUTA BAGA, *a double crop after corn.* In prudence I should wait another year's experience, but as the season advances, I shall relate what I do know. Every horticulturist in the Southern States must have his mortification, after preparing land, to find his seed bad; indeed, he is quite an honest seedsman, that only mixes *three-fourths of bad*, to one of good seed. I have seldom ever been so fortunate. Accident threw in my way an advertisement of *William Cobbett, No.* 11, *Bolt-court, Fleet-street, London*, offering warranted seeds for sale, of his own raising, particularly Ruta Baga seed, warranted, at the following rates, if 25wt. price 9*d.* str. per pound, if 50wt. 8*d.*, if 100wt. 6*d.* I got some of his seeds last year, *all good;* and have some arrived this year. These particulars I mention for the benefit of those who may attempt the culture of turnips or other articles.

Mr. Cobbett sends his seeds to any place (cash first paid); mine were sent to Liverpool, expense trifling, and there put up in an air-tight tin canister, sufficient to hold half barrel of flour, expense 5*s.* 11*d.* But to the turnips.

My corn, as usual, in rows 5 feet apart, land well ploughed in the spring by oxen, and entirely attended during summer by a small cultivator harrow of 3 teeth, and a light mule—no bed to the corn. In all August and September, say to the 15th of September, I consider the season in our sea-islands,—the corn was stript of their leaves, and tops cut; a furrow was drawn between the rows with a shovel-plough, and two bushel baskets of manure, dropt into each task row; a furrow on each side with a bar-share, covered the manure, and made a small bed; the top being levelled with a hoe, draw a small trench, 2 inches wide, 1 deep, and therein, at every 10 inches, drop 5 or 6 seeds.

Such particular and good directions are given in William Cobbett's Year in America, also inserted in the Baltimore American Farmer, 1st volume, that I refer to it; as soon as convenient pull up the the corn-stalks, and

throw the earth on each side to the turnip bed; the rows will of course be 5 feet apart, but where land is plenty, this is an advantage If there was no corn I should not plant ruta baga at a less distance than 4 feet. The following spring plant corn in the turnip bed; it will receive the benefit of the manure. I am convinced land this way will be much improved and produce double crops; the last crop (turnips) more valuable than the corn.

I planted 8 acres this way last year; the season was dry, and my people awkward; the seed, though good, came up badly, from drought and bad planting; my ruta baga being exhausted I filled up with Norfolk turnip; crop hardly set till late in September. Turnips, as Cobbett says, are poor watery things, compared with ruta baga, and so they are; yet, quite beneficial to cattle fed on dry food. Most of my field consisted of Norfolk turnip, and I commenced on them, reserving the ruta baga till the last, having many oxen; I regularly fed, during December and Januany, 30 bushels of turnips per day, chopped up *raw*, and found much advantage.

My allowance of ruta baga, was 5 bushels per day, which was boiled, for experiment. I fed two horses one month thereon, without grain, only rice-straw; I never saw horses thrive better. Some sheep were fed on boiled ruta baga, raw Norfolk turnip and cotton-seed; I never saw fatter mutton. Poultry requires no better food. My negroes had free access to the turnip patch. I preferred the ruta baga; seldom eating a meal without a plenty. When the frost happened in February, the Norfolk turnip was entirely destroyed, and though the ruta baga were frozen, after being thawed, they remained good. My present crop of corn, planted in the last year's turnip beds, looks very well.

I am respectfully, dear Sir, your most obed't serv't.

JOHN COUPER.

Questions from a Correspondent, and Answers by the Editor.

"Mill Haven, (Geo.) June 1, 1835.

To the Editor of the Southern Agriculturist.

Dear Sir,—In the number of the *Southern Agriculturist* for the last month, a Correspondent who gives us a receipt for *curing the bots in horses*, tells us that one thing used

in preparing the drench, was, the guts of a gourd, but does not tell us whether the goard was green or dry.

Again, he tells us "three pints of water were put to the pulp, and boiled to the consumption of one-half the water: to this a pint of molasses was added, (this makes two pints and a half) and this mixture put into a common porter bottle," &c. which contains less than *one quart.* Is there not some mistake in this?

It will oblige some of your readers, if 'Agricola' will give us a little explanation. J. L. M.

[We think it may be fairly inferred from what our Correspondent says, that the Calabash was a dried one, for he observes that "*it was sawed* in two, and the peth or pulp" was used. It is very evident that if it had been a green one, a saw would not have been necessary to cut it, a knife of any description would have been sufficient. To get at the interior of the Calabash, nothing more would have been necessary than to have dashed it on the ground, but it is highly probable that they were anxious to preserve the hemispheres as dippers of water, which is another reason that makes us think that the Calabash was a dry one, for all who are acquainted with that article, know that it would be almost impossible from the brittle nature of the shell, to cut it in two parts with a knife, without endangering its destruction, and hence the use of the saw.

As regards the bottle, we think it was made use of as the ordinary implement for drenching horses on account of its strength, and, therefore, if a gallon of mixture were to be made use of, a bottle would still be used for introducing it in the animals stomach; for although the bottle in this case did not hold three pints, yet the mixture might be given in two operations.—*Ed. So. Agr.*]

State of the Crops, and Agricultural Notices; extract from a letter, to the Editor, dated

"Appling, (Geo.) May 22, 1835.

Sir,—Frost in February last, did winter grain immense harm; half the wheat was killed, and nineteenth-twentieths of the oat crop. We re-sowed the latter, and although late, it looks like making a harvest. For flour, we must depend on our Northern neighbours. A few years past the blight and rust affected the wheat so far, that many planters quit the culture altogether; those who did sow last fall, cannot reap more than one-third or half

a crop. The torrents of rain have desoiled the declivities and gullied our hills to a frightful extent. This is respectively the case on the water level, and straight rows so uniformly, that I cannot see any advantage the former has over the latter mode of culture.

I am introducing horizontal ditching, the results of which, I am inclined to think well of, and may at some future day be the subject of a communication in your Agriculturist. Your labours in which may God speed.

Respectfully,

A. C.

Busby's Journal.

[Journal of a recent Vist to the principal Vineyards of Spain and France; with some Remarks on the very limited Quantity of the finest Wines produced throughout the world, and their consequent intrinsic Value; an Attempt to calculate the Profits of cultivating the Vine; a Catalogue of the different Varieties of Grape; and an Estimate of the Profits of Malaga Fruits; together with Observations relative to the Introduction of the Vine into New South Wales. By James Busby, Esq.]

VARIOUS circumstances have led the British people to examine the capacity of improvement of their penal colonies. Expensive plans have been prosecuted by joint stock companies, under grants from government, for extending the cultivation of chosen tracts of country. The commodities which enrich similar climates in the old and new worlds, have been introduced; and fond anticipations cherished of great resources, magnificently developed. When calculation ceased, fancy has filled out the picture.

The recent publications relating to these colonies have constituted not the least interesting department of general literature; and indirectly they have caused to be produced dissertations, as remarkable for profound philosophy, as for rich variety in the register of facts, drawn from that and other quarters of the world.

To this register of facts, one of the latest contributors, is Mr. James Busby, who has published his "*Journal of a recent Visit to the principal Vineyards of Spain and France*," undertaken with the view of promoting the growth of the vine at Sidney. The traveller seems to have undertaken the task without any official appointment, and as far as a brief sketch of his work in a late number of the *London Gardener's Magazine* shews, he comes be-

fore the public as a mere literary adventurer, of course, the phrase is used without reproach.

We shall adopt the remarks of the Magazine, and the extracts contained in it, from the traveller indiscriminately, in giving some account of his observations.

In South-Carolina, a few individuals have exerted themselves, both as cultivators and writers, in promoting the vine planting; but the taste does not seem to have acquired popular currency. We have no leisure to be happy, and even as a diversion, it does not captivate our people.

In Georgia, below the mountains, on the contrary, there appears an evident disposition near the flourishing villages of her middle country, to spread the mantling foliage of the grape over hills sadly misused in our wasting agriculture. Wine growing is likely to become there a popular cause, and hereafter to extend into the precipitous limestone ridges of the Cherokee country, which (if some of our traveller's opinions be correct) possess peculiar advantages in the production of the finer varieties of wine.

It is said that several vineyards have been planted, and wine and raisins made near Sydney. And our traveller observes, that the degree of spirit with which the plantation of vineyards had commenced in the colony, and the wine he had tasted from the vineyard at the orphan's school, left no doubt in his mind of ultimate success.

"Mr. Busby arrived at Cadiz on September 26, 1831, 'and soon after proceeded to the vineyards of Xeres and 'its neighbourhood. The whole extent of the Xeres vine-'yards, which produce wine fit for the English market, 'does not exceed 7000 acres; and about double that extent 'will also include the whole of a district which produces 'an inferior wine, generally sent to England as sherry. '"A great portion of the wines exported to England under 'the name of sherry are the growth of Malaga, and are 'brought round by sea, and are transhipped at Cadiz. 'Most of the sherries sold by retail in England under 40*s*. 'a dozen are either of this kind, or of the commonest qua-'lities of the district above alluded to in the neighbourhood 'of Xeres, known as the vineyards of San Lucar and Port 'St. Marys.'"

"From Malaga, Mr. Busby sent to England a box con-'taining 500 cuttings of vines of different kinds, and also

'dates, Jordon almonds, and onion, melon, and other 'seeds, which he afterwards shipped for Sydney.

"In the beginning of November, Mr. Busby took ship- 'ping for Catalonia, landed at Roxas, and proceeded over 'land to Perpignan, in France. Here he was shown the 'extensive agricultural establishment of Messrs. Durand, 'bankers, even though he had no letter of introduction to 'them. The culture both of the vineyard and the corn- 'field in this part of France appears to be of a very infe- 'rior description. In planting a vineyard, the ground is 'merely once ploughed, and the cuttings thrust in with 'an iron bar, and left to take their chance. They are 'pruned every year, but never manured. On one of M. 'Durand's estates there is a handsome mansion, and ex- 'tensive gardens and a green-house; and Mr. Busby was 'happy to promise to assist in stocking the latter with 'Botany-Bay seeds. From the director of the Botanic 'Garden of Montpelier, M. Delille, Mr. Busby received the 'greatest attention, and cuttings of nearly 500 varieties of 'grape, with a packet of seeds for the Sydney Botanic 'Garden. Professor Delille showed him the cow-tree '(Galactodéndron) and the St. John's bread (Ceratònia,) 'and informed him that both of these useful trees would 'in all probability thrive in New South Wales. At 'Tarascon the Messrs. Audibert conducted Mr. Busby 'through their extensive nurseries, which he found very 'well kept; entertained him at their house for a day and 'a night: and gave him numerous seeds and cuttings, 'and even rooted plants, of some varieties of grapes; for 'none of which articles would they receive any payment 'whatever, though he called on them without any intro- 'duction."

"'The Hill of Hermitage is so called from an ancient 'hermitage, the ruins of which are still in existence near 'its top. It was inhabited by hermits till within the last '100 years. The hill, though of considerable height, is 'not of great extent; the whole front which looks to the 'south may contain 300 acres; but of this, though the 'whole is under vines, the lower part is too rich to yield 'those of the best quality, and a part near the top is too 'cold to bring its produce to perfect maturity. Even of 'the middle region, the whole extent does not produce 'the finest wines. M. Machon, the gentleman whose pro- 'perty we were traversing, pointed out to me the direction

'in which a belt of calcareous soil crossed the ordinary 'granitic soil of the mountain; and he said it requires the 'grapes of these different soils to be mixed in order to pro- 'duce the finest quality of Hermitage. I took home a 'portion of the soil which he pointed out as calcareous; 'and the degree of effervescence which took place on my 'pouring vinegar upon it indicated the presence of a con- 'siderable portion of lime. It is probably to this peculi- 'arity that the wine of Hermitage owes its superiority; 'for, to all appearance, many of the neighbouring hills on 'both sides of the Rhone present situations equally fa- 'vourable, although the wine produced, even upon the 'best of them, never rises to above half the value of the 'former, and, in general, not to the fourth of that value. 'A good deal may also be attributed to the selection of 'varieties. The best red wines of Hermitage are made 'exclusively from one sort of grape, which is named Ciras, 'properly spelled Scyras, which is thought to be a corrup- 'tion of Shiras, in Persia, whence this grape is said to have 'been brought originally, by one of the hermits of the 'mountain. The white wines are made from two varie- 'ties, the Roussette and the Marsan. The former yields, 'by itself, a dry spirituous wine, which easily affects the 'head, and the plant produces indifferently; the latter 'yields a sweeter wine: they are mixed together to pro- 'duce the best white Hermitage.' (p. 108.) The wines 'of the Hermitage are strongly manured; and the propriе- 'tor said that, without frequent and strong manuring, the 'vines would scarcely yield anything; adding, that pro- 'viding only horse or sheep dung were used, there was 'no danger of giving the wine a bad flavour; which the 'dung of cows, and especially of pigs, seldom fail to do.

"One of the most remarkable practices in the culture 'of the vine, and the management of the vineyards, is 'what is called *provignage*, by which the vine is rendered 'a travelling plant. It is but slightly practised in Spain; 'but is almost universal in France, except on very rich 'soils. We have already described it in our first volume, 'and need here only remind our readers that it only con- 'consists in entirely burying the plants, except the points 'of their shoots, at various periods, from three to fifteen 'years. By this means, a plant at one end of a vineyard 'may ultimately reach, under ground, to the other end. 'The underground shoots do not decay for many years, 'and may sometimes be found nearly 100 ft. in length.

'The object seems to be to get young bearing wood, without ever missing a crop, which would be the case, if the plants were raised either from cuttings inserted where they were to remain, or from detached rooted plants. As the trenches in which the plants are laid are generally made as deep as the soil will permit, a great part of the benefit is probably a consequence of this thorough stirring of the soil."

"The following is Mr. Busby's account of this practice:

"By dint of frequent observations and repeated questions, I conceive that I at last perfectly understand the system of *provignage*. To make it plain, suppose a small portion of ground to be annually planted with vines. At the end of ten or a dozen years, a number of the plants, in the portion first planted, become weak and worn out. These weak plants are removed, and their places filled by provins from their stronger neighbours; but these provins are not mere layers which leave the stock exactly as before. The whole space of ground, generally the breadth of two rows of plants, is dug out to the depth of about 2 ft.; the old stock is then laid flat down in the bottom of the trench, and the branches, that is, the wood last produced, are twisted and bent into the places where the voids are to be filled. The stock is thus converted into the root of two or three different plants: it throws out fibres from every side, which henceforth yield the nourishment to the plants, and the old root dies off. I observed some spots where all the plants had been too weak; and a colony of young plants, as it was called, had been introduced, which would be employed in peopling their neighbourhood when they had acquired sufficient strength. The *provignage* extends irregularly over the whole vineyard; but most, or all, of the plants are thus buried, and renewed once in twelve or fourteen years; and thus the whole is in a constant state of bearing (the provins yielding a crop the first year, and it is seldom necessary to introduce young vines."

"Mr. Busby's concluding observations are highly valuable:—

"Having recorded with so much minuteness my observations on every vineyard and district through which I passed, I will avoid adding to the length of the journal by offering many general remarks. I cannot, however, refrain from observing, that, from the albarizas of Xeres, the most southern vineyard of any reputation in Europe, to those of the chalky hills of Champagne, amongst the most northern, I met with no vineyard producing dry wines of reputation which was not more or less calcareous. Although it is acknowledged that two-thirds of the vineyards of France are situated upon soil more or less calcareous, by Chaptal, and other writers upon the subject, they have stated that, provided the soil is porous, free, and light, its component parts are of little consequence; and they enumerate granitic, schistose, argillaceous, flinty, sandy, and calcareous soils as equally well qualified to produce, and as actually producing, in different parts of France, wines of the finest quality. It appears evident to me, however, that these writers have, in many instances, been misled by the representations which have been transmitted to them: as, for instance, when Chaptal and

Cavoleau* cite the wine of Hermitage as an instance of the excellence of wines produced upon the debris of granite; while the fact is, that the wine of the hill of Hermitage owes its superiority over the wines of the other hills in its neighbourhood only to the circumstance of the granitic soil of a part of that hill being mixed with calcareous matter; and but for this circumstance, I am satisfied that the wine of Hermitage would never have been heard of beyond the neighbourhood where it grows. I am, therefore, of opinion, that the finest dry wines owe their superiority chiefly to the quality of the soil; and I am much mistaken if it be not found that the soils of all vineyards producing dry vines of superior excellence are strongly calcareous. All my observations have led me to this conclusion, and I know of no instance to the contrary. It will be observed, that I here only speak of dry wines, for sweet wines of great excellence are produced in a variety of soils, and, in fact, owe their qualities more to the variety of the grape, and the manner in which it is treated, than to the soil. The sweet *Muscat* and *Old Mountain* wines of Malaga are celebrated all over the world; but though they have the same varieties of wines at Malaga as at Xeres de la Frontera, and pursue a similar practice in making the wine, the best of their dry wines, produced on a soil consisting of decomposed slaty schist, are insipid and flavourless when compared with the Sherries which are produced on the chalky hills of Xeres. The sweet wine of Rivesaltes, the most celebrated in France, is produced on a granitic soil covered with pebbles; and the sweet vines of Cosperon and Collioure, in the same department, are produced on hills of schist, as nearly as possible resembling those of Malaga. But though the dry wines of both these soils are well known, they are not distinguished for their fineness or flavour. Their excellences are their strength and rich colour, which make them valuable for mixing with the weak and light-coloured wines of the ordinary growths of Burgundy and Macon which supply the chief consumption of Paris.

The limited extent of the first rate vineyards is proverbial, and writers upon the subject have almost universally concluded that it is in vain to attempt accounting for the amazing differences which are frequently observed in the produce of vineyards similar in soil and in every other respect, and separated from each other by only a fence or a footpath. My own observations have led me to believe that there is more of quackery than of truth in this. In all those districts which produce wines of high reputation, some few individuals have seen the advantage of selecting a particular variety of grape, and of managing its culture so as to bring it to the highest state of perfection of which it is capable. The same care has been extended to the making and subsequent management of their wine, by seizing the most favourable moment for the vintage—by the rapidity with which the grapes are gathered and pressed, so that the whole contents of each vat may be exactly in the same state, and a simultaneous and equal fermentation be secured throughout—by exercising equal discrimination and care in the time and manner of drawing off the wine, and in its subsequent treatment in the vats or casks where it is kept—and, lastly, by not selling the wine till it should have acquired all the perfection which it could acquire from age, and by selling, as the produce of their own vineyards, only such vintages as were calculated to acquire or maintain its celebrity. By these means have the vineyards of a few individuals acquired a reputation which has enabled the proprietors to

* "Œnologie Française, ou Statisque de tous les Vignobles de France, Paris, 1827."

command almost their own prices for their wines; and it was evidently the interest of such persons that the excellence of their wines should be imputed to a peculiarity in the soil, rather than to a system of management which others might imitate. It is evident, however, that for all this a command for capital is required, which is not often found among proprietors of vineyards; and to this cause, more than to any other, it is undoubted to be traced, that a few celebrated properties have acquired, and maintained, almost a monopoly in the production of fine wines."

"He was also anxious to procure information as to the 'variety of vine which produces the finest muscatel 'raisins at Malaga. These raisins are dried in the sun, 'without undergoing any other process; whereas, the 'other kinds of raisins are dipped in a ley, to which, in 'the case of some sorts, oil is added; thus enveloping them 'in an alkaline or in a soapy crust before they are dried. 'Hence, while the muscatel raisins, produce at the rate of '25*l.* per acre to the grower in Spain, the other sorts are 'not worth a fifth part of that sum. Mr. Busby has no 'doubt whatever of producing muscatel raisins in the 'colony equal to those of Spain; and in that case, they 'will form a most valuable article of export."

"At Malaga Mr. Busby arrived on October 21st. It is 'remarkable that the proprietors of vineyards here have 'found that a dark-coloured soil is the best on which to 'dry their raisin grapes, in the same manner as the inha-'bitants of some parts of the Alps have learned to throw 'black earth upon snow, to increase the force of the sun's 'rays in melting it. The muscatel grapes are only grown 'on a very limited surface, and never farther than two 'leagues from the coast. 'There are three distinct sorts 'of raisins; first, the muscatels, which are the finest, and 'are always packed in boxes of 25lb. each, and half and 'quarter boxes; secondly, sun or bloom raisins, which 'are prepared like the muscatels, but from a different 'grape, and which are generally packed in boxes, but 'sometimes in casks; and, thirdly, the lexia raisins, which 'are packed in casks, or in grass mats called frails. 'These raisins are of an inferior kind, and require to be 'dipped into a lexia, or ley, of wood ashes, with a little oil, 'before drying.' The grass mats here alluded to are 'made of the Stipa tenacíssima, which also forms the 'ropes to which the noria baskets are attached; and which, 'indeed, is applied to a great variety of purposes."

We shall use the other things noticed by our traveller, which relates to climates resembling our own.

PART II.

SELECTIONS.

On Chemistry, as connected with the developement and growth of Plants.

By the Author of the Domestic Gardeners' Manual; in a series of numbers, published in the London Horticultural Register.

ARTICLE SIXTH.

My fifth paper on the Chemistry of Nature, concludes the series, as refers to the operations of the natural agents. I am now arrived at a point at which chemistry, in the common acceptation of the term, may be called into action, and exert a legitimate sway over inanimate objects; for, wherever the vital principle prevails, there, I conceive, we are scarcely justified in attempting to ascribe the phenomena produced, to the work of chemical agency. The chief subject of this article will be to describe—

The Analysis of Soils.—The most comprehensive directions for effecting the important processes of analysis, are to be found in the last edition of Sir Humphrey Davy's Lectures upon Agricultural Chemistry. Drs. Thompson and Henry have written on the subject; but for common purposes, I consider a very simple process to be more suitable. No writer that I have met with, has entered into refined, philosophical inquiry on every point of the analysis; and, without great space, it would be impossible to go into minute detail. I prefer, therefore, to simplify the routine, but to elucidate, as far as may be, the chemical principles which refer to each individual process.

The varieties of soils are almost innumerable, but the constituents are very few. Divest a soil of vegetable and animal, decomposable matters, and the pure earthy parts consists of sand or gravel *(siliceous substances.)* pure clay, *(alumina)* chalk *(carbonate of lime,)* and iron, in the form of an oxide. These are the staple earths, and they all have metallic basis. Occasionally, small portions of magnesia gypsum *(sulphate of lime)* oxide of manganese, and some saline products —as common salt, muriate of lime, and perhaps sulphate of potash,— are traceable by delicate analysis; but good loams, the very best, productive lands, do not require the presence of these compounds. The four primary earths named, are blended in varying proportions; hence, it is almost impossible for any one to ascertain that he can possess himself of a soil which has been recommended for the growth of different plants. The gardener is told, and reads of rich loams, sandy loams, light mellow earth, &c. &c.; but all these terms are indefinite;

and no one can follow the directions thus candidly given, without being subject to disappointment, for the loams and earths, which a person may believe to correspond with those he reads of, are susceptable of changes as numerous as those that may be rung upon a peal of as many bells. Chemical analysis is the only source of correct information: and it is fortunate that a man who is of an inquiring turn of mind, and desirous to investigate causes, can, at a very trifling expense either of money or time, arrive at a certainty of conclusion,—which must be extremely satisfactory.

Let any one take up a spit of, what he judges to be, a good, sound loam; and then let him select about a saucer full from the middle part of the spit—say, four inches below the surface: this should be done in fine weather, when the ground is in rather a dry state. The soil so collected should be broken, or rubbed by the hands, till it be made as fine as possible; and, in this state, it is to be exposed in a open shed or room, to the influence of a current of air, where it may lose all the moisture that it can be deprived of, without the aid of fire or direct sunshine. Things being in this state, it will be proper to allude to the instruments which will be required for a sufficiently minute analysis; and I cannot do the subject greater justice, than to tanscribe a paragraph which I find in Dr. Henry's Epitome of Experimental Chemistry, 8vo. page 412, Edition 1808. I do this with the greater satisfaction, because the writer was an extremely clever Chemist, and had extracted the directions he gives, from an early work of the late S. H. Davy. Hence the reader will be in possession of two eminent chemical authorities, and this must tend to inspire confidence.

The instruments are—"a balance capable of containing a quarter of a pound of common soil, and of turning, when loaded with a grain; a series of weights from a quarter of a pound Troy, to a grain; a wire sieve, sufficiently coarse to admit a pepper-corn through its apertures; an argand lamp and stand; some glass bottles; Hessian crucibles; porcelain or Queen's ware evaporating basons; a Wedgewood pestle and mortar; some filters made of half a sheet of blotting paper, folded so as to contain a pint of liquid, and greased at the edges; a bone knife, and an apparatus for collecting and measuring aëriform fluids. The chemical substances, or re-agents required for separating the constituent parts of the soil, are muriatic acid, (spirit of salt,) sulphuric acid, pure volatile alkali dissolved in water, solution of prussiate of potash, soap-lye, solution of carbonate of ammonia, of muriate of ammonia, solution of neutral carbonate of potash, and nitrate of ammonia."

I shall arrange the processes under their respective heads—thus:

1st. *Drying.*—When this has been effected by the air, till the mass be reducible to powder, let an ounce weight be gently triturated in a mortar till the bulk will pass through the sieve; by this means the larger stones, bits of wood, or vegetable matters, will be separated. If the first be found sufficiently hard to scratch glass, they may be considered siliceous or flint stones. If they effervesce when acid is poured on them, they are calcareous, or of the nature of chalk; but if they be soft, easily broken up, and do not evince any hissing, or disturbance in strong acids, they are of an aluminous or clayey nature. These stones and fibres ought to be weighed, in order to find what is their comparative proportion with any known weight of soil. Four hundred grains of the siftings, by accurate weight, are to be put in a saucer, with a small piece of shaving; and this vessel is then to be exposed to the heat of a gentle charcoal fire or lamp, (the contents being often stirred

with a wire,) till the chip becomes slightly charred; at which period the drying must cease, otherwise the vegetable portions of the soil may be burnt; and in that case the chemical properties of the soil will be materially affected. It is calculated that the heat which will thus render a bit of shaving somewhat brown, is about 300 deg. of Farenheit. The soil thus dried, ought to be accurately weighed again, and its loss in weight will show the quantity of water of absorption which it can retain. In fact, if soil so dried by actual fire heat, be long exposed to the air, it will absorb a corresponding degree of moisture again, though it remain dry to appearance. Davy, Mr. Johnson, and other writers, consider the absorbent power of soils to be indicative of their composition if not of their comparative fertility. Fifty parts out of 400 may be lost out of some soils—others lose but 20 or even 10 parts; and in these, sand is very predominant. I doubt the criterion much: having an example before me of a very fine loam which I find to be almost, altogether *fine silex*, and which loses 5½ per cent. by a heat of about 300 deg. Coarse sand indeed is very little retentive, but siliceous earth is comparatively, very highly so.

2. *Process of Washing.*—Suppose that 20 parts of water have been separated from 400, by the heat of 300 degs.—380 parts of grain, remain: let these be boiled in four ounces of rain water, and then, suffer the particles of soil to subside. When cold, decant the clear liquid; then add a little more water to the deposited matters,—stir them together, and pour the whole into a paper filter, which has been previously dried and weighed. Wash in all the dregs, and catch the drainings. If the liquid decanted off, be not quite bright, let it pass through the matters in the filter: *finally*, wash those, by adding a little more pure water. These waters of lixiviation contain all the salts, and other substances soluable in water; and they should be retained in a vessel for future experiment. The filter and its contents are to be dried,—first by absorption on a lump of chalk; then, by gradual exposure to a strong heat: to that at least, which the side of a parlour stove furnishes. The paper and its contents are then to be weighed; and the quantities of soil remaining, will be ascertained by subtracting the weight of the paper. Should the soil retain any degree of moisture, it must be dried in a saucer, or upon a broad plate of tin, and be then rebalanced.

3. *Process by Muriatic Acid.* It will facilitate the description to place before the reader an imaginary analysis, which, however, will contain a close approximation to a real process. We will, therefore, presume that by drying and lixivitation, the original quantity of 400 grains has been reduced to 360 grains. These might be treated in bulk with the acid; but I propose to the analyst, to divide the soil into two equal parcels, each of 180 grains; because, as the object is to detect the carbonate of lime, it may, with advantage, be effected by a comparative experiment, which will prove very instructive.

Muriatic Acid dissolves carbonate of lime, (chalk,) Magnesia and Oxide of iron; it also will take up alumine, (clay,) but in very small quantity, unless a long continued heat be applied.

The muriatic acid of the shops if good, ought to be of 1180 or 1200 specific gravity—compared with distilled water of 1000—that is, supposing any given measure of pure distilled water to weigh one ounce, one pound. or any other unit; good muriatic acid should in the same bulk, weigh one ounce, one pound, &c. and about one-fifth more; but this is two strong to operate with: it therefore is to be diluted with

twice its volume of rain water. A quantity of this diluted acid being ready, the two quantities of the soil, each of 180 grains, are to be disposed of: one in a four-ounce phial with a widish neck, the other in an evaporating basin, or in a florence oil flash. Place the phial in a scale, and by its side in the same scale, put another phial, or measure glass, containing 360 grains of the reduced muriatic acid, weigh the bottles and their contents, with great precision; note the weight, and let the bottles and weights remain in the scales. Prepare the same quantity of dilute acid for the other 180 grains of soil, and then proceed thus: pour some of this last parcel of acid into the basin or flask, stir or shake the contents, and observe whether much hissing, (effervescence,) with frothy bubbles be produced. If there be, the presence of much chalk is ascertained, and caution indicated, while operating with the substances in the scale. When it is found that the liquid will not be carried over the side of the vessel by the force of effervescence, all the acid of the second parcel may be added, and the mixture left to digest for two hours; it should, however, be stirred two or three times with a strip of glass, or be shaken, if in a glass flask.

The required caution being pointed out, the phials in the scale are to be attended to. Into that containing the soil, drop very gradually, or pour in more freely (according to the indication of the process above described,) some of the diluted acid of the other phial. Agitate the contents after every addition, always observing that none of the mixture be forced out of the phial. This caution must ever be attended to in chemical experiments, and therefore, I am desirous to impress it upon the mind of a young experimenter: a little practice will soon bring on a habit of circumspection. The whole of the acid having been decanted from one phial into the other, and the contents being thoroughly mixed by the requisite agitations, the phials are to remain side by side in one scale, and the balancing weights in the other. Let the mixture be occasionally shaken till it be evident that no further bubbles or effervescence can be excited, and then let it stand till two hours have passed. Both parcels have thus been acted upon by the same solvent, and for almost precisely the same time, but in different positions for determining results. The parcel in the basin or flask has lost as great a quantity of elastic fluid, as that in the phial, but neither the bulk nor the weight of that fluid (which is *Carbonic acid*) can be ascertained; whereas the parcel in the phial, provided the operator have been careful to maintain the same position of both phials and their balancing weights, is placed in a situation wherein the loss will be readily discovered. The two phials being now weighed again, will be found to have lost weight, and, therefore, small weights must be added to the scale with the phials, till it slightly preponderate; and then by counting the number of grains so added, the operator will detect, precisely, the quantity of elastic acid which has passed off.

The reader, will, I think, be at no loss to pursue the directions thus detailed, without let or perplexity, and may then turn to the consideration of the results.

Perhaps so little action has been induced in the *basin*, that it has scarcely been perceptible; and in the phial, there has been hardly any loss of weight. One parcel will have been a correcting check to the other, and so far the student have found a source of satisfaction, but another result, and one far more important, remains to be mentioned. In passing, I remark that this inaction, and scarcely sensible loss of weight, combine to prove that little calcareous matter has been in the

soil; that point is settled. But I will let it pass, for it best suits my purpose to presume that several grains of elastic fluid have escaped.

Lime exists in soils in a state of *Carbonate*, that is, in union with carbonic acid; but its affinity for that acid, is less than for muriatic acid. When, therefore, the latter is placed in contact with it, the former is abandoned, and escapes in the state of gas, leaving the lime united with the stronger acid, in the form of a *liquid* muriate of lime.

In order to determine the quantity of carbonate of lime, the weight of the gas lost must be carefully examined: it is rather unfortunate that chemists differ in their calculations. Henry estimates the carbonic acid in every hundred parts, to be about 35 parts, others state it at 39; Davy says, "Carbonate of lime in all its states contain a determinate proportion of carbonate acid, *i. e.* nearly 43 per cent:—and for every 4¼ grains of elastic gas loss, he estimates the carbonate of lime to be 10 grains. We will in this case suppose that, the experiment with the two phials, has produced a diminution in weight, of 6 grains; the quantity, therefore, of carbonate lime, in the 180 grains left after drying, &c. is about 15 grains. To correct this experiment by comparison, recourse must be had to the other parcel of soil of 180 grains. The contents of the basin or flask, must be poured into an accurately weighted filter placed in a glass funnel, and the liquor or which percolates is to be caught in a glass vessel; the soil in the paper is to be washed repeatedly with pure water, till it drop free from acid flavoured, and the filter, after being laid for a time upon a lump of chalk, is to be dried and weighed as before: the loss of weight, when perfectly dry, will indicate the quantity of matters dissolved, but not that of the carbonate of lime only, because, the solution contains a certain portion of iron,—if not magnesia, &c. Another test, therefore, must be resorted to.

4. *Process by Prussiate, or ferro cyanate of Potash.*—Dissolve 20 grains of the salt in about half an ounce of water, weigh this solution, and drop it by degrees into that of the previous process. A copious precipitate of Prussian blue will be produced, and additions of the test are to be made till no more precipitate be formed. The process cannot be effected at once, because so much blue is often present, that the whole of the liquid is full of it, and time must be allowed to let it subside: try the clear fluid thus, till the falling drop of the test cease to yield any blue; then again pass the solution through a weighed filter, let it drop perfectly free from blue, and wash the precipitate till no saline taste be discernible. Reserve the blue for another operation.

Into the clear liquor drop strong solution of *Carbonate of Potash:* (this forms the 5th process,) and continue the addition till effervescence cease, and a white precipitate falls down. Solution of Carbonate of Potash is to be added to some excess, the acid will then be subdued, the chalk will be yielded, and the supernatent fluid will be muriate of potash, with a slight redundance of alkali, Prepare a filter, weigh it—pour in the liquid and its sediment, and proceed as before; that is—in this and in *all other similar operations*, wash the precipitate with clear rain water, till no taste be perceived: then absorb the water left in it, placing the filter first on a piece of dry chalk, and then by applying heat. The weight of paper and its precipitate will now indicate the quantity of the latter, which ought to correspond, very closely with that determined by the previous calculation. Thus, if every process have been correctly conducted, there will be found about 15 grains of

carbonate of lime upon the filtering paper, and this will agree with the estimate.

Magnesia, perhaps to the extent of a grain or two, may exist with the chalk in the filter. The mode of ascertaining the fact would be tedious, and my limits prevent the description of it here.

6. The *Prussian blue* in the other paper set aside, must be weighed with its paper, and, so must the portion remaining of the Prussiate of potash. Perhaps there are 8 grains of the former, but a part has been produced by the test which always contains some iron. If 8 grains of the dry Prussiate have been employed, allow about one-fourth of its weight—or two grains, and six grains of Prussian blue will remain. This latter substance is a prussiate of iron, and in order to detect the exact weight of the oxide of iron in it, fire must be employed to drive off the Prussic acid; but as great difficulty must attend this method of analysis, in consequence of the close adhesion of the blue to the paper, I propose that a small quantity of hot, caustic alkali—such as soap-lye, or pure potash in solution, be dropped into the filter till the blue colour pass away, and the sediment become of a foxy brown: the prussic acid will be removed, and become united to the alkali; and then, the paper being washed till no taste be present, the substance remaining will be oxide of iron, with perhaps a grain or two of alumine. The weight of the paper when dried, deducted from the gross weight will give that of the oxide of iron.

7. *Test by Sulphuric Acid.*—The experimenter may either operate with the quantity of soil remaining after the abstraction of the iron from the parcel tested in the basin, or he may proceed first with that in the phial, and apply the prussiate of potash, and solution of Carbonate of potash, for the separation of the prussiate of iron and Carbonate of lime, as directed above. In either case, he will have the same materials to work upon; but there will, in the lattter, be a double quantity of the two products, and a like addition to the weight of the remaining soil. The 180 grains of each parcel have been reduced to about 160 grains, and if we suppose one of these to be taken, it will be needful to boil it in a flask or basin, for two or three hours, with a diluted sulphuric acid prepared by cautiously adding 200 grains of the concentrated acid to 800 grains of pure water.

The substances remaining in the soil are usually the clay or alumine, a further dose of oxide of iron, and a large one of fine siliceous earth. The two former are soluble in the sulphuric acid, the third is not so; consequently, after the due action of the acid the flinty matter or siliceous earth, is left alone without any other constituent.

After boiling, the vessel may remain till its contents become cool. Then recourse must be had to the filter for the separation of the clear liquid products; and the siliceous earth must be washed as before directed.

The iron is to be precipitated, either by prussiate of potash, or by succinate of ammonia; and lastly, the alumine by carbonate of potash. If succinate of ammonia be used, a brown succinate of iron will be yielded; the alumine will pass through the filter, as a solution of sulphate of alumina. Carbonate of potash will seize the sulphuric acid, from this, and throw down the liberated alumine, in the form of a light cloudy mass, of a dingy white colour. Let that be collected, dried and weighed: weigh also the siliceous earth remaining in the last paper filter, and the analysis by my simple process will be complete, as far, at least, as refers to the four staple earths of the soil. Mi-

nutiæ must not be attended to, before the analyst become a practised chemist.

RECAPITULATION OF PROBABLE RESULTS.

	Grains.
Water of absorption driven off by heat, say - - - - - -	20
Do. of lixiviation which contains vegetable extract, muriates of soda, and lime, say - - - - - - -	20
Carbonate of lime from the muriatic acid in both parcels 15 by 2 -	30
Iron from this acid in the form of Oxide, - - - - - -	8
Siliceous matters of the two united parcels, - - - - - -	276
Iron from the sulphuric acid - - - - - - - -	6
Alumine from do. - - - - - - - - -	25
Loss by washing filter, &c. - - - - - - - -	15
Total,	400

When the student shall have acquired some dexterity in the performance of these simple experiments, he will perceive the necessity of deeper research: and to conclude with the words of the great Davy—he will gain general information by attempting original investigations. "In pursuing his experiments he will continually, be obliged to learn from books the history of the substances he is employing, or acting upon; and his theoretical ideas will be more valuable in being connected with practical operation, and acquired for the purpose of discovery."

On the Reproductive System of Vegetables.

[Extracted from Goodsell's Genesee Farmer.]

THE reproductive faculty in plants exhibit a clear and close analogy to that of the animal kingdom. The artificial but convenient Linnæan system is founded upon it. One set of organs within the flower, the stamens, prepare the productive pollen, or fine dust-like substance, which passes in the proper time from them to the stigma, and adhering to that becomes the germ of the future plants. Without this pollen there is no reproduction by seed or fruit. The natural pollen is the most effective, and no other naturally occurs to the stigma, although pollen from other flowers may be inserted on it. We have in this operation of the motion of the pollen to its germinating receptacle, another instance of the exactitude with which the effective means have been carefully provided and adapted to their appointed ends. Although it has to pass with a precise force over the particular distance, varying in every species, that is between the stamen and the stigma, and therefore to be suited exactly to this space, and to take correctly the direction of each stigma, and this in many millions of instances at every recurring season, and to light exactly upon its minutest point; and to do this in the ever-moving air, and whatever winds may agitate it; yet this peculiar movement always takes place at the proper time in every species of plant, by a species of explosion, but with such skilful aim and measured movement, as it were, that in every plant it is performed with exact and invariable effect; so that from their creation to the present hour, every species has regularly and abundantly produced its due seed and fruit.* Wonderful has been the

* In some kinds, the flower is made to close on insects, and imprison them awhile apparently that their efforts to escape may shake the pollen from the stamina to the stigmata, as wherever the pollen rightly attaches, it tenaciously adheres, and cannot easily be displaced.

contrivance by which this indispensable action has been made to take place as universally and so effectually! Nothing would seem more to require an unerring eye and guiding hand, than the transfer of this little fructifying projectile from one part of the flower to the exact spot near it on which it must settle, in order to germinate into the fruit; and often from one flower to another; and not unfrequently from one plant to another. The utmost precision of the direction and degree of the protruding impulse, and the most exact timing of the discharge to the receiving state of the recipient, are in every instance indispensably necessary. The smallest error or deviation would frustate the effect. Who is the secret calculator, measurer, impeller, regulator, and director? Who is the floral engineer that, in each returning spring, guides and rules this botanical artillery with unfailing skill and success in the quadrillions of quadrillions of flowers than annually adorn our globe? and even, in some cases, accomplishing the prolific object at great distances. Where the organs are on separating plants, and the end cannot be obtained by instantaneous projectility, there bees and insects are made the conveying agents, and the honey in the nectarium of flowers is the attraction that invites them to become such, though unconscious of the important purpose which they are fulfilling, while intent only on their own enjoyment. So diversified are the means employed by the Inventor and Preserver of our complicated fabric, to produce his appointed ends! Thus the main producing system of nature is every where maintained. On this subject there is another remarkable congruity between plants and animals; and a further instance of the careful foresight and calculated provisions with which nature has been constructed, and its parts adapted to each other. This is, that in the number of male and female plants produced, where there are distinct individuals, the principle of equalization is observable.

But although the phenomena of nature in all regions exhibit the universal presence of this floral mechanism for vegetable formation, yet it is also certain that the reproductive system of the botanical kingdom is not confined to this mode of fructification. The living principle has also the power, in trees, of forming its offspring by buds or shoots, in addition to the flowers, or instead of them. This is a very curious fact, and has led our botanists to the perception that a tree is not a single individual, but is an actual tribe or association of families, springing from the parent trunk; closely associated with each other in collateral contiguity and compact union within one stem; yet each preserving a distinct separateness of vascularity, living principle, nutrition, growth, productivity and subsistence. It is now inculcated, that every bud is a distinct offspring of the tree or branch from which it protrudes. When emerged into life and form, it pushes downwards its own vessels, inside of the parental bark or rind, to the earth, from which they draw a separate and proper nourishment. This they transmit to their newborn shoot; and thereby enable or assist it to expand into foliage and enlargement. Sometimes these vessels are seen passing through the bark into the air if that suffices for their nutrition. Thus every branch, and every ramification by buds from itself, are so many new individual descendants of the general parent trunk: and the whole tree thus becomes and exists in the state of a large society, or affiliated tribe of distinct individuals, intimately associated together. Hence, all trees, and some flowers, may be planted by slips or branches, which then grow into all their functional organs, and have their prin-

ciple of life as fully within them as the new-born young of any quadruped or reptile.

It appears, also, that plants produce either shoots or flowers, according as the circumstances under which they are at the time situated lead them to the one or to the other. After a continued production of shoots without flowers, a vegetable has, when its nutriment from neglect became insufficient for its ramifying elongation, suddenly disclosed its floral organs; and in this way prepared for an offspring by its seeds, when prevented from perpetuating itself by branches: thus evincing that it had received the power of varying its mode of organic reproduction according to the immediate expediency.

This fact proves that plants have a double mode of perpetuating their species—by branching or by seed. Each is equally effectual, for every new twig is the embryo of a new tree: but it is to a seed what an animal born alive is to an egg. In the one case the parent completes its offspring within itself; in the other, it prepares it ready to be afterwards completed; but leaves it to undergo another process—that of hatching in the egg, and that of germination in the seed, before the new individual is perfected.

All trees displays this double power, and their living principle is ever active to exert it. It does this in making continually new leaves and twigs when it does not form flowers and fruit. It is from this action, that when it luxuriates in foliage, it forms fewer of the latter. To increase the fruit of trees, gardeners frequently prune their branches, and pluck off their leaves. This turns the producing energy from exercising itself in emerging shoots, and causes it to use its other faculty of forming flowers. Copious nourishment gives it a vigour beyond what is necessary for the floral process; and then it prefers to that its formative ramifications and leaves. Scantier food lessening its strength for this stronger action, it seeks to employ itself in the gentler and more delicate and beautiful operation of framing its corolla with the included stamens, stigmata, and pollen.*

This principle explains the phenomena of its floral organs changing into leaves, or into coralla, or into each other, and of green leaves, transmutating into those of the flower. It is indifferent to the living principle into which of these it converts its nutrition, as either of them will answer its purpose. It can by forming leaves and twigs multiply itself, as well as by flowers and seeds; and it inclines to either mode of action as superinduced exigences lead it. If it be interrupted in its elongating process, it resorts to its floral. Interferred with in this, it recurs to its foliage, it forms its stamen as one of its floral instruments; but if disturbed in this, it makes a corolla, or a stigma; and forms a stamen at another time, or else a leaf instead. The living principle acts as if it had the choice of doing at all times either, and of always doing that which it is at the time easiest or most expedient for it to perform. Its law is to multiply. That was the original command. It has the choice of different ways, and the use of various means to

* In this respect plants differ from animals. "In the latter, fulness of feeding advances productivity; but in plants, where they receive abundant nourishment, their flowers and fruits are long in appearing; but when the nourishment is feeble, and the vegetable languishes, its productive powers act with rapidity. The less nourishment it receives the more ready it is to reproduce."—*Bull's Univ.* 1830, p. 210.

obey this order, according as external circumstances may affect it; but it is continually striving to fulfil the injunction it has received, by the one process or by the other. Nothing is more marvellous —nothing can more completely illustrate and verify the creating mandate. From the moment that it was uttered, its efficacy has never ceased. There is a constant nisus in all vegetation to fulfil the ordination in every situation; and the double mode of production has been given, that, by having this alternative, no event in the ordinary course of nature may defeat it. Even mutilation of its floral organs has been found to fail in to totally preventing the reproduction.*

Some natural agencies may interrupt the formative process. Frost has the fatal power of frustrating its productive agency; but this destructive effect may be averted by covering its open blossoms.† Its germinating power is also liable to be arrested by obstructing circumstances: thus depth precludes its growth. Seeds and roots will not begin to vegetate much below the surface.‡ A polarization has been

* Henschel, doubting the sexuality, made several experiments to disapprove it. In some he intercepted the pollen: in others took away the stamens, or the stigmata, and their several flowers. The results afford some curious facts of the power of the living principle to effectuate its production, though deprived of some of its natural means of doing so. His general conclusions have been mentioned in note p. 129. But he thought that in particular instances he had obtained fruits from the *digitalis purpurea*, *polemonium cæruleum*, *zea mays*, and *ricinus communis*, without pollen; also in the *orchis murio*, *saxifraga granulata*, and *cucubalus viscosus*, though the stigmata had faded when the polen was emitted. The stigmata flowers were taken away from the several cucurbitaces, except one, which did not blow till all the stamen flower had disappsared, yet it produced fine fruit, all the stamen stalks of the *canabis sativa* were plucked off before flowering, yet the stigmata bore ripe fruits.—*Bull. Univ.* 1829, p. 55–57.

On the whole, his mutilations so often failed, as to confirm the Linnæan law, and to prove that this is the real law of nature; although when disturbed the living principle has at times the power of effectuating its appointed purpose under all the disadvantages of the disturbance.

Such experiments only show that anomalous variations or exceptions may be forced on the natural organizations. But no anomalies which art or violence may produce can overthrow the regular economy which has been established in each department of being. A polype may be cut in pieces, each part may grow again, like a lobster's amputated claw, into its entirely, from the repairing or producing powers of its living principle. But nature never produces polypes in that way. It is not her law that polypes should be so divided, nor that the lobster should be so mutilated. Her general laws proceed steadily and constantly in their course, until violated by counteractions. Hence, all anomalous productibilities in plants neither disprove nor alter her universal modes of forming them. They enlarge our knowledge of the gifted powers of the living principle, and our admiration at the providing care with which all organizations have been made, so that even impeding interferences are prevented from defeating their assigned operations.

† Dr. Stowe wrapped the trunks of some of his chief-trees in hay as the flowers began to open; and though late frosts followed at the end of April and beginning of May, all these produced abundant fruit, while other trees failed.—*Gar. Mag. May*, 1827.

‡ Potatoes planted at one foot deep produced shoots at the end of spring; at two feet, not till the middle of summer; at three feet, their roots were very short, and

lately attributed to seeds in their germination; and it has been ascertained that the descending radicle has the strength to penetrate into quicksilver.—*Turner's History.*

Corn-Stalk Fodder.

[FROM THE FARMER AND GARDENER]

In some late numbers of your "Farmer and Gardener," I read with much pleasure a detail of the management of the corn-stalk as a food for cattle, &c. First induced to turn my attention to this subject by the different communications to be found in the "Farmer," for many years back, I began in 1830 to test the value of the refuse of corn, when subjected to the process of steaming. I was not long inventing a strong, rough apparatus for my purpose, which succeeded well, and in which I prepared about twenty bushels at once. Previous to this, I had, however, fallen on a plan of saving my corn and stalk, &c. somewhat different from my neigbbours; but in a way that the columns of your valuable paper had been long labouring to persuade the corn planters of the country to try fairly, viz: to cut down the stalks at the ground, at a certain stage of maturity, and at one effort to cure corn, stalks, blades, &c. in the field. I had seen this first practise on the south branch of the Potomac, as far back as 1812: and about 1817, I determined to try the process in this section of the Union, not being able to discover any solid reason why it should not succeed as well here as on the south branch of the Potomac, or elsewhere; but indeed compelled to believe, from a recollection of the climate I was in, that it must succeed here much better. In 1817, I tried six acres—cut it down at the ground, about a week after the blades were ready for stripping. I found a little shrinkage in the grain, but I felt satisfied, that as my corn was got like Pindar's razor, "made to sell," but to eat, that what was lost by the shrinkage was no part of the nutritive principle; and I did not despair of getting over that difficulty, by further trial, and by improving the mode of proceeding.

The following year I cut down five acres. I began the saving of this field of corn by going through it, as soon as a few of the under blades appeared ready to pull, and gathered and brought them home, throwing them in an old out-house to cure, and which, by a little turning over, I readily effected. I will remark here, that this five acres was a piece of corn on which I was trying the effect of rotten cotton-seen as a manure, by planting four stalks in a hill, on light land, at the distance of five feet by four. On this field I had determined also to try the full effect of an economical management, in saving the result of labour bestowed on the earth—"Save all" was my motto, and I literally saved every blade.

Before my corn required a second pulling of blades, I found the shuck on the ear in that state, which authorized, I believed, the next step, and the principle one I had in view, the new mode of saving the balance by one "*coup de main.*" The result of observation and reflection induced this determination, viz: that in the saving process,

did not come to the surface; below three feet, they never vegetated. Several were buried in a garden at three and a half feet, and after two years, were found without any germination, but with their original freshness, firmness, and proper taste.—*Ann. Soc. Agr. Fr.* 1830.

the mode of stacking the corn-stalks that would permit them to cure the most gradually would certainly admit the least lost by shrinkage from evaporation, &c. To effect this, I selected four strong, careful hands, to cut and lay down, taking eight rows at a through. On getting to the end of the rows, they turned round, and gathered together sixteen hills, each bringing to one who attended the stacking. As each man placed his arm full on the ground the butt ends were pressed by him as far into the earth as possible, throwing the tops together, so that when the sixteen hills were brought together at the tops the mass presented a sugar-loaf appearance, spread well at the bottom, to admit the entrance of air—tying at the top with a bandage of crab-grass found among the corn, and twisted into small rope in a few minutes. In this way I cut and stacked my field. On the 10th day I found by an examination of the inside of the stacks, that the whole was cured in a way that I could not have exceeded by any other process, although the weather had been rainy occasionally. I hauled the whole home, and packed it away under open sheds, and in old out-houses. In this state it continued, until winter's bleak and stormy weather admonished us that in-door business was to be attended to; when all the hands went to stripping "corn and fodder from stalks." In doing this, I observed the following order, viz: each individual threw his ear of corn, as he pulled it off, behind him, and his stalks on one side, laying them down with attention to regularity; and the fodder on the other—as soon as he had an armful of stalks to remove, he rose and placed the stalks in a pile, casting the fodder into another depository. All this precaution, as regarded the stalks was to have them in a situation that with expedition and convenience they could be placed in the cutting-box, to which they were to be subjected. In one day's work, I had a prodigious pile of stalk thus stripped. The next rainy day I brought in my "Eastman," and a man and a boy soon reduced the pile to pieces, half an inch in length. Here, Sir, I would just remark, what a quantity of this labour I got through within a short time, by pursuing every moment systematically, and being prepared for every operation before I commenced it. It will now be readily granted, that I had saved as much of the nutritive qualities of the stalk, shuck, and blade, by my mode of curing, as was possible to effect; and also, that I had prodigiously diminished the labour usually bestowed in the common mode of saving corn and its refuse. At the same time that I was preparing the stalks, I also shucked, so that cutting up the stalks, I cut, at the same operation, a proportion of shuck with stalk.

But the principle object was yet to begin, viz: to prepare these cut stalks and shucks in such a way as would render them the most nutricious and palatable food for cattle. To effect this, I proceeded thus: I placed three strong hogsheads, made of cedar, well pitched, on the the outside, on a platform, about three feet from the ground, having at the bottom a large spigot to let off their contents. Just before these, I had a large trough placed at the distance of twenty feet, and well inclosed along with the hogsheads. Between the hogsheads and the troughs, I had the steam apparatus placed all under a shed. Into these hogsheads I threw a small quantity of boiling water, and into the water a portion of corn meal, (coarse ground) just sufficient, when the cask was filled, to produce the vinous fermentation, as if going to distil; with a good straw mat top, for each cask. After an hour, and well stirring, I filled up with cold, soft water, and left the mass to ferment. As soon as the liquid was ready, or just as the acetous fermenta-

tion was about to commence, I worked off in my steaming-box a turn of the stalks and shucks, mixed up, and as soon as sufficiently steamed, I placed a quantity in my trough, pressing them well down, with a false top, moveable as I wanted, and now drawing the spigot from the cask ready, the liquid was permitted to cover them, running along a portable, light trough, such as distillers use for conveying water. This I did in the evening, and by morning, I took up in light buckets the quantity required for the mornings feeding of my oxen and cows, &c. placing it in the feeding troughs, stepping only a few feet, sprinkling a little salt over the mass. The cut stalks and shucks had become perfectly charged by absorption with liquid, at once one of the most palatable and nutricious preparations yet discovered—of this food I gave them plenty. The effect on the flesh and milk, exceeding my most sanguine expectations. My cattle became excessively fond of it, and so I fed as to "lose nothing."

My casks by a little management, I had always "under weigh," one always ready. I now ascertained to my full satisfaction, that I could not bestow too much trouble, (as it is called,) in saving my corn stalks!

Satisfied of the value of my labour, I have since added to the steam-box all refuse potatoes, turnips, cabbage leaves, beets, parsnips, carrots and pumkins, squashes, cucumbers, &c.; in fine all the vegetable productions of the field, orchard or garden, as the season may afford, "that nothing may be lost"—and I find that I am well paid for the labour bestowed. The last, after absorbing what they will contain of the liquid, goes to the support of "old Ned."

AGRICOLA.

Millet.

[FROM THE FARMER AND MECHANIC.]

Mr. Editor,—Wheat and rye, for the last two years, have not been more than half a crop. Hay has been the only profitable crops we had in this country, for the last two years. Many of our farms, however, will not produce a profitable crop of timothy; on such farms, no crop will be more profitable than millet. If cut before it is fully ripe, all writers agree, that it is equal to timothy for hay—and such is my experience; I have now some of the hay, which I have shewn to some of our best farmers, who think, from its appearance, that it is equal to timothy. It is eaten by my horses, mules and cows, with as much avidity as they could eat timothy.

I made, last summer, an experiment with millet, which, whilst it was in progress, called forth the smiles of some who seemed to think that a *lawyer* could not know any thing about farming, but which has been so successful, that I am anxious to communicate it to our farmers. I had never seen a crop of millet growing, notwithstanding the prejudice against it, in this country, had, from my reading, formed a very favourable opinion of it, and thought I would judge from my own experience. From the 1st to the 19th May, seemed the usual time for sowing. The latest I had read of, was of the 5th of June—ripe from the 1st of August till the 1st of September. For several reasons, which it is unnecessary to detail, I thought the 1st of July would be time enough to sow, and that it would get ripe before the ordinary time of our having frost. About the last of June I mowed a field of clover, blue grass and timothy, (growing on limestone land); I wished

to put in wheat, in the fall, a part of it. I thought if ploughed then, as is the custom of our farmers, and permitted to lie exposed to the sun till the first of October, the ground would be more impoverished by the sun, than it would be by a crop of millet. I therefore ploughed about the 1st of July, 1834, two acres of it—harrowed them—and on the 7th of July, sowed on two acres, one bushel and a half of millet seed. Our farmers will recollect that they have seldom experienced a drier season than we had last year, from the 1st of July till about the 1st of October. On the 20th of September, I cradled the millet—the lower ends of the heads not ripe—the blades quite green—commencing to cut, after the sun had dried it—let it lie in the swath till next day—then bound it in sheaves of the size of those of wheat—hauled it in immediately, the weather being brittle—thrashed it as hauled in—too damp and thrashed badly—my hands thought that not more than one half the grain was thrashed out—certainly not more than two-thirds. Produce, forty-two and a half bushels of seed, and at least three tons of hay. If but two-thirds of the seed was thrashed out—the produce would be sixty three bushels of seed and three tons of hay to the acre. Others have raised more than two tons of hay to the acre. As soon as the millet was cut, I ploughed the ground, found it in fine order and sowed it in wheat.

Now to the practical result: instead of letting the ground, when ploughed, lie all the summer exposed to the sun, I harrowed it, and sowed on it one bushel and and a half of millet seed. The seed cost three dollars—the expense of harrowing and sowing any farmer can calculate. The crop raised, at the very least calculation, was worth sixty dollars.

If our farmers will, as soon as they cut their clover fields, plough them down, and sow them in millet, they will gain one crop, and that a most profitable one. I hope the "Guilford Farmer" will make the experiment.

JOSEPH CHAMBERS.

Chambersburgh, (Ohio,) March 18, 1835.

Removal of a Grape.

[FROM THE FARMER AND GARDENER.]

THERE is an impression prevailing amongst many horticulturist, that if a grape, which has once borne, be removed, it will not bear the ensuing season: and some go so far as to say it will not bear again in a less number of years than it did originally from the cutting. The first opinion may, probably, as a general rule be correct; but then we conceive it to be within the power of the person making the removal, to form an exception to that rule, if he observe due care in taking up and transplanting his vine. We have a very fine *Miller's Burgundy* in our yard, now four year's old, which bore last year and the preceding one: from its luxuriant growth, it became troublesome to manage in the situation it first occupied, and we determined to remove it; but fearful that it would put it back in its bearing, we first consulted a gardener of considerable experience, who gave it as his opinion, that if removed, it would not bear for two years, and probably not then.

This for several weeks deterred us from carrying our attention into effect: for, the grape being an excellent bearer, we were unwilling to hazard the loss of so grateful a prospective treat as we anticipated from the luscious fruit it yields. However, after reasoning with ourself—

having listened, probably, more to our wishes than an impartial exercise of the judgment would warrant—we determined in our own mind, that up it should come; and in despite of our fears, had absolutely conceived the belief, that it would not be arrested in its bearing. Things thus arranged, we employed a careful hand to dig up our vine, and personally attended to the uncovering and tracing of every root, tap, lateral, branchings, and all the delicate attachments. The tap-root we succeeded in getting up without injury: the lateral roots, were too long for convenient transplanting, were carefully cut off so as to leave a smooth surface, a very keen knife purposely sharpened for the occasion, being used in the operation. Prior to taking up the vine. We had a hole prepared much deeper than necessary to receive the root. At the bottom of which we put four spades full of long stable manure, and upon the top of that a compost, formed in the proportion of one spade full of leached ashes to six of rich mellow loam. After we had filled the hole with this *compost*, we placed the vine in it, and nearly filled up with a *muck* made of the same, say to within about six inches from the surface of the ground. The remaining space we had filled with the dry compost, which was well pressed down around the roots of the vine. To prevent the roots from being disturbed, we confined the branches firmly against the wall.

The removal did not take place till the 14th of March, and notwithstanding the lateness of the season, the vine has not been retarded in its vegetation in the least, is now studded with bunches of young grapes, and bids fair to afford a full crop.

This is but a solitary instance, and it is unfair to assume from its success, that it would answer as a general rule; but we incline to the belief, that if equal care were taken, in the removal of vines, the bearing in a majority of cases would not be retarded.

Baltimore, May 26, 1835.

Ornamental Plants.

[FROM THE GENESEE FARMER.]

We resume our selections from the (English) Horticultural Register, in the hope of inducing the admirers of ornamental gardening to place such beautiful plants on their lists of desiderata.

Glycine sinensis,—This is the *Westeria sinensis* of M. de Candolle, and the *W. consequa* of Loudon's Hort. Brit. It is an extremely interesting plant. Its flowers are of a rich blue mixed with rose colour. Introduced from China in 1816.

Barberis aquifolium.—This plant was originally discovered in North Western America by Mr. Menzies, and more recently by Mr. Douglas. It is a very ornamental evergreen, perfectly hardy, and will thrive equally well either in peat or common garden soil.

Barberis glumacea.—This is the *Mahonia glumacea* of de Candolle, and was found by Mr. Douglas in shady pine woods at the mouth of the river Columbia, where it was seen in great abundance. It is very hardy, but cannot bear that the extremity of its stem should be removed. The leaves are remarkable for the deep purple they acquire in autumn. Its flowers, like those of *B. aquifolium*, are of a bright yellow.

Anemone acutipetala.—A native of Switzerland, introduced in 1819, by Mr. Schleicher, and flowers with us in April. Its flowers are purple, large and showy, and is perfectly hardy.

Aubrietia purpurea.—A very pretty little spring plant. It was introduced in 1831, and is a native of the South of Europe; flowers plentifully in April, and is perennial and quite hardy.

Ajax cernuns.—Drooping creamy-white Ajax.—This beautiful plant has been confused with *Ajax moschatus.* It is certainly the most distinct and handsome species of the whole genus.

Aquilegia garneriana.—A beautiful and splendid hibrid. The seeds were produced from *A. sibirica* impregnated with the pollen of *A. vulgaris.* It is quite hardy; succeeds well in the open borders, and nealy equals *A. sibirica* in beauty. Its colour is beautiful purple.

On the Proper Management of Posts, with reference to their durability.

[FROM THE FARMER'S REGISTER.]

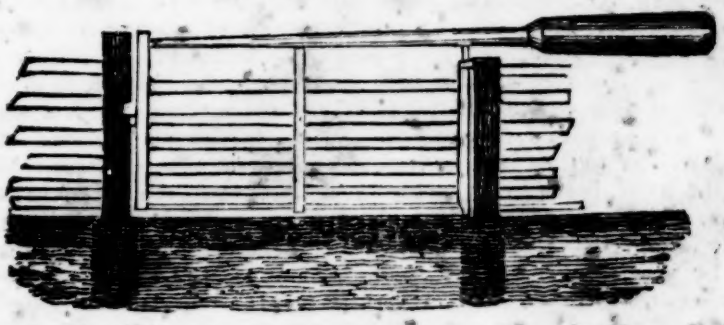
PERHAPS there is no subject connected with agriculture, on which a greater diversity of opinion prevails than the question, whether, with reference to their durability, posts should be put in the ground green, or seasoned? When I first settled, I took considerable plains to inform myself on this point, by consultation with those whose experience, should constitute them proper fountains of information. The diversity to which I have alluded, impaired greatly the acquisition of decisive results. Mr. Thomas Thweatt, of Dinwiddie, (a gentleman of great judgment and observation on all agricuitural subjects,) related to me a circumstance which contributed much towards the attainment of my object. He stated (if my memory be correct,) that in the erection of his garden—a number of posts as he supposed, were prepared and suffered to remain until they were thoroughly seasoned. Its completion, however, required one in addition, which was taken from an adjacent tree, and immediately put in the ground. Seventeen years had elapsed, and every post had rotted down except that one, which remained sound. In the progress of my investigation another instance was related in which an entire side of a garden exhibited the same resuls. My own limited experience furnishes an incident worthy of being mentioned. My garden enclosure was erected of posts while green. Several pieces remained exposed, until they were completely seasoned. Out of these a horse-rack was constructed, which has entirely rotted down, while every post in the garden remains firm. From these facts I deduce the belief, that a post planted when green will last longer than one previously seasoned; and for the reason, that the operation of seasoning produces cracks in the timber, which admitting the moisture from the ground cause its decay. I recollect to have read the account of an experiment, proving that the inversion of posts, from the direction in which they grew, operated beneficially. Two gate posts were hewn from the same tree—one was planted in the manner in which it grew, the other inverted. The former rotted down while the latter was sound. It was accounted for in this way—that nature had formed valves for the *ascension* of the sap, which allowed the moisture from the ground to penetrate through the same channel; but that the inversion of these valves, interposed a barrier to its admission. This theory corroborates the idea previously expressed, that the moisture of the groud, alternately penetrating within the timber and in droughts, measurably receding, causes its decay. Whether

the posts should be cut while the sap is up or down, I am unable to determine. A writer in some of the numbers of the American Farmer, states that oak timber should be cut while the sap is up, because it is glutinous and forms a cement, or substance which acts as a preservative.

I have ventured to express these hasty and imperfect reflections, with the hope that although they may not impart any useful information, they may elicit some from others. These are controverted subjects. in which every person who erects a gate or encloses a garden is deeply interested—and their further discussion will be valuable, at least to S.

Balance Gate.

[FROM THE FARMER'S REPORTER.]



Sir,—If the following improvement in the construction of farm gates should be deemed of sufficient value to be of use to the farmers of this country, you are requested to make it known to them through the medium of your valuable paper.

This gate consists of two main posts, set firmly in the ground at the proper distance asunder, in the line of the fence; that part which is above the ground, is made about 12 inches square, and the lower part is left round, forming a shoulder at the surface of the ground. These posts have mortices on the exterior sides to receive the rails of the fence. The gate itself is formed of three posts of scantling, 4 by 5 inches square, into which are framed about six strips of 1¼ inch boards, 4 inches wide, so as to form a rectangular gate of the length and height required. Upon the top of these posts rests a beam, which extends back far enough just to balance the gate. The heel-post, upon which the gate turns, rests upon the shoulder of the main post, at the surface of the ground, where there is a depression made to receive it. and it is secured at the top by a staple, or hoop of iron, passing around it, (the upper part of the post being rounded for that purpose,) and is fastened into the main post. The latch or fastening is formed by making one of the slats pass through the front post in a long mortice; and the slat being cut in two at the middle post, and secured by a pin, the piece can be raised or lowered in such a manner as to latch and unlatch the gate. The notch is cut out of the main post, to receive the latch in such a manner as to allow the gate to open either way. This gate is much neater, more substantial, and is less

liable to get out of repair, than those formerly in use. There are two gates of this description on the farm where my father resides, in the north part of Champaign County, and he intends soon to have one to each of his fields.

D. LAPHAN.

Cincinnati, (Ohio) Dec. 19, 1833.

On making Rice on Dry Land.

[FROM THE FARMER'S REGISTER.]

In my paper on the subject of cultivating *corn*,* I stated the article of *rice*, as entering into the crop. My reason in part, as you will have no doubt discover, for introducing this article amongst others, was that it is found not to affect in any unfavourable way, the growth of the corn, &c.; and also, that I have satisfied myself, from repeated trials, that this mode of raising it, is calculated to produce that grain in the *greatest* perfection.

The rice cultivated throughout this State† on highland, is in every respect similar to the rice plant of South-Carolina. It is found to grow well in every soil we have, from the pipe clay ground of the pine woods, to the black fat limestone land of the great cane break. In the latter, however, it excels—although from some fair trials I have seen, and indeed assisted in making, I am compelled to believe that pine land, (gray) with a good red clay foundation, moderately prepared by manuring, lime, &c., will equal in production, for quantity or quality, even the fat black land of the great cane break. It is the most generous grain I know of—will meet successfully a greater variety of seasons and soil than any other. I know of no soil or situation perfectly unfavourable to its production, and it is never made, with our planters, any question in what land they will put it; but what spot is most convenient on the farm of the second year's land. On every species of pine land, with a little cow-penning, cotton-seed manure, or any other decomposed animal or vegetable matter, it grows luxuriantly, from four to five and a half feet in height, and produces astonishing crops of grain; say from forty to one hundred bushels of shell rice, that is rice with the husk on, per acre.

The rice produced on our uplands, I am satisfied, is superior in quality to the water-raised rice of Carolina—especially that which we raise on the calcareous soils. When boiled in pure water, it exhibits a most decided superiority in the glutinous over the watery principle. I could not possibly admit any comparison in the quality of the two productions. The grain of what we call the "big white," is remarkably large, both in hull and when cleaned—although the "red bearded" is by some thought superior. Both of these kinds, with the "small white," grow well on dry upland. The operation of hulling or cleaning, is performed with the common pestle and mortar, or in our little tub mills, by partially raising the stones when they become dull and want picking. I have had it cleaned under those circumstances, as handsomely as any table would require.

It may be proper to add, that in boiling the upland rice raised in this section of country, it is found to absorb, or to make a mass at

* Farmer's Register, page 634, Vol. ii. † Alabama.

least one-eighth greater than the rice of South-Carolina, or any other, where water is employed as an agent in its production.

The straw is found admirable winter forage for horses, mules, oxen, and cows; but especially for young cattle—and a prodigious mass of it is produced from an acre of land. A sheaf of rice passed through the cutting box and given daily, with her other food, to a milch cow, in the winter, is found to produce superior milk and butter. We raise it with so much ease, that we find it economy to give it to our poultry and pigs, for both of which it is admirable, given in the hull. It is thrashed out with great ease over a bench properly placed, or a barrel.

It is the first article I plant in the spring. If planted alone, and if planted as early as possible, it will be off the ground before the arrival of the *rice-bird*. Like other grain, I have found it superior, when cut (if for table use,) just *before it is perfectly ripe*. In this case the straw is cured when still *green*, consequently, *highly nutritious*, and when cured still retains its colour.

In cultivating this grain, the ground should be turned over in January—harrowed with the furrow, and the first favourable state of the *weather* and *soil* in February or March, lay the ground off in drills with a *half shovel*, for the purpose of having the seed deposited as deep as possible, so that, after it is hilled up, the roots may be deep in the ground, and which, in case of a drought about filling time, will secure it. This last precaution has been the result with me of several experiments. The drills may be as near as eighteen inches apart, if the rice is cultivated alone, and it can be covered with a small board fixed to a scooter-plough stalk, or with the hoe or rake. The first is the most expeditious, and requires no other attention than to cover shallow. When six to nine inches in height, plough with a scooter between the rows with a small pony or mule, and finish it off with the hoe, drawing the earth to it. If the land is light and loose, one ploughing is sufficient—keeping the ground loose and clean is all that is required. It is cut with the sickle, in dry, hot weather, and put up in sheaves the next day, and stacked or housed.

I have had it cut down with the frost twice in the spring, without any bad consequences. I planted once in the *twelve* days, and made a fine crop, remarkable for weight. It was cut down by frost twice; I was making experiments to defeat the *rice bird*, but found that planting in February, or even March, and cutting as before stated, will always find the crop in the barn on his arrival.

I am assured that you will find no difficulty in raising this valuable grain in your vicinity. All difficulty as regards preparing it for table use, is done away, by substituting the wooden block in lieu of the stone—the first being furrowed out in the same manner. Attached to a small horse mill, for my own grinding, I have four pestles, worked in as many mortars, that would clean for a whole neighbourhood.

Where I have ground to put in corn of the second year after being cleared, and especially if I can afford a little manure to the land, I would always raise my rice as before stated, with the corn. When the land is not disposed to produce grass, it is made with less labour, for the production, than any crop I know of.

AGRICOLA.

Alabama, March 15, 1835.

On the Cultivation of Celery.

[From the American Gardener's Magazine, published at Boston, Mass.]

THE March number of the Horticultural Register, and General Magazine of useful and intesting Discoveries, connected with Natural History, and Rural Subjects. Conducted by J. Paxton, F. L. S. H. S. London. Contains a long and excellent article on the cultivation of the celery. It suggests to cultivators of this delicious vegetable, a new mode of blanching, and, also, explodes the old system, so firmly rooted in the minds of most farmers and gardeners, of setting the roots in trenches, so deep that they have nothing to nourish themselves with, unless it were the cold, stiff sub-soil of the low situations, which are generally selected for growing the plants. The cultivation of celery, we have long been aware, is little understood in this vicinity, as is apparent to every observer, by the weak and stunted growth of the roots which are offered for sale in our markets. Instead of that tall, stout, erect growth, and crispy appearance, which are part of the qualifications of celery roots, they are invariably one mass of short, slender, pithy stems, not much larger than a quill, and each root divided into innumerable offsetts, not generally weighing more than one or two, or at the most, three pounds each.

The method of growing in trenches, was as much practiced with the English horticulturists a few years since, as with our gardeners at the present time; but lately, the various articles which have appeared in their Magazines, have awakened attention to the subject; and, except where prejudice still exists, the old system is entirely given up. A gardener was once even thought visionary, and wholly unacquainted with his profession, who should suggest the idea of planting celery, in the same manner of other vegetables.

"When a mere tyro in a Gentleman's Garden," says the author of the article on Celery, which we have named, "a severe rebuke received, for presuming to suggest the propriety of planting Celery in trenches less deep than those which immured every leaf of the plant beneath the level of the circumjacent earth, dwells yet fresh upon the memory. To harsh language, threats were added, *for daring to think*, yet thought revelled unconfined, although the tongue was chained by the iron hand of tyranny! and meditation urged on to experiment which fully realized my buoyant hopes, and brought conviction of the justness of my young idea."

An article in the Horticultural Register three years since, first called our attention to this practice; we then first read of celery roots weighing ten and twelve pounds each, and immediately perceived the reason why we never had grown it to such perfection. The error of planting in trenches, at once occured to our minds, and we have since planted at less depth, and procured much finer roots. The future experiments which we shall make, will, we hope, enable us to give our readers considerable information on the subject.

A writer in the American Horticultural Register, for January,* has offered some remarks on the cultivation of celery, recommending the old method of cultivation; as this might mislead many amateurs and gardeners, or at least confirm their opinions in the old way of raising this vegetable, we had intended to have inserted a communication in

* See page 216 Southern Agriculturist.

an early number of our Magazine, and were preparing one, when the March number of Paxton's Horticultural Register came to hand. The excellent hints in an article on the celery, contained therein, induced us to adopt them in place of our proposed communication. At some future opportunity we shall resume the subject. The writer in the American Horticultural Register, says:—

"By the first of July they will have attained sufficient growth to be removed into trenches, which should be prepared in an open, well exposed spot, by digging them two spades deep and two and a half feet wide, leaving three or four feet distance between the trenches; on this space is to be piled up, like a bank, the earth taken from the trenches. Put about four inches of good manure at the bottom of each trench, and dig it in; take up the plants, and previous to putting them into the earth, trim the roots very carefully, being sure to cut off the end of the tap-root, and eradicate all little shoots and radicles, where the heart joins on to the root, as these shoot up and produce that mass of small heads, seen in our markets, instead of one large, solid, handsome plant; place them about three inches distance and water well for the first week. As the plant grows, gently fill in the trench with the earth on each side, taking care not to throw in large lumps, which twist and and contort the celery, and spoil its beauty: and continue earthing up until there is a bank above ground as high as the trench was deep."

This is precisely the common mode pursued by every gardener, with no alteration that we can perceive; in the following extracts from Paxton's Register, the proper method is fully detailed:—

"The Manchester gigantic Celery," says the writer, "has long borne away the palm, and won the laurels of celebrity, throughout England, for its size, weight and quality; how has my young heart panted to know the reason, or cause of such decided superiority! Situated between the sea and a bleak mountain ridge, in a northern latitude, with a cold and sterile soil, what advantage can Manchester possess for the growth of Celery? None, save and except a trifling additional supply of rain water from the clouds, by reason of its proximity to the ocean and mountain ridge. After a close and minute investigation, there appears no just reason to induce another opinion than that the well earned fame of Manchester Celery arises solely from superior cultivation. There have been single roots of Celery exhibited in Manchester which have weighed twenty-five pounds each, but let it be remarked, there was a deception practised on such roots *by loading them with white sand*,—a circumstance which ought to be recorded with all the odium attachable to such conduct. However, it is a certain fact, that roots, clean and free from all such scandalous trickery, have been shown, weighing eighteen pounds each. During last summer, three roots, to which was awarded the first prize at the Manchester Botanical Gardens, weighed upwards of thirty pounds, on the 18th of September; and three other roots were subsequently extracted from the same row, or trench, in regular succession, which weighed forty-five pounds collectively. It is an humiliating reflection, that such described celery was grown by a paper-maker and not by a gardener. Whilst the culture of Celery at Manchester has attained such an high state of perfection, is it not amazing, that throughout a great part of the kingdom, roots weighing from two to three pounds, and otherwise defective, should obtain first prizes at the numerous Horticultural exhibitions? Do not such plain truths indubitably prove

a general inertness, or inaptitude for improvement in horticulture, as contrasted with other sciences? From whence these interrogatories are extracted, others succeed, which might by possibility lead to discussion irrelevent to this subject, and are consequently withheld.

"In growing Celery, many gardeners, with a laudable but misplaced zeal of surpassing their contemporaries, use a profusion of dung, almost without any admixture of soil, in their seed boxes, in their plant borders, and in their trenches, to which they add liquid manure at repeated intervals; and in such cases commonly find their produce of *stunted growth*, of an *acrid* taste, and ligamentous tenacity. These observations are not made as wholly condemnatory of the use of dung in growing Celery, but to expose the fallacy of such unlimitted profusion; for well sized and superior flavoured Celery may certainly be obtained without the aid of dung or other tillage, in situations where good bog-soil can be procured,—for instance, say, the top spit of a good pasture."

The seedlings are raised in the usual manner and transplanted into seed beds; the following are the writer's concluding remarks; they are so valuable, we extract them entire without further comment:—

"To produce Celery of good quality, very large, fine and clean grown, there are several particular essentials, different in some respects to any which have hitherto been promulgated, necessary to be attended to and adopted by those gardeners who are anxious to rival, or excel the justly famed Lancashire growers.

"First, let a compost be prepared in the beginning of winter, and where practicable, let it consist of two-thirds of good bog-soil, and one-third of well decomposed dung from an old hot-bed; or in case the bog-soil be poor, let the quantities be equal: let them be thrown up together, twice turned over and thoroughly incorporated, and at the last turning over, shortly before filling the trenches therewith, in neighbourhoods where good fertilizing magnesian lime can be procured, add from one to two bushels thereof to a cart load of compost; this will cause an ammonia to be given forth highly conductive to the rapid growth of the plants. Bog-soil is recommended in preference to every other, on account of its peculiar retention of moisture, as well as the facile nature of its composition, being adapted to receive and nourish the delicate and multitudinous fibres. In situations where bog-soil, or peat cannot be readily procured, let the sods of a grass sward, together with a portion of loaf mould, supply its place, to which add one-third part of dung.

"Secondly, in order to grow Celery *very large*, it is indispensably necessary to abstain from and avoid those constant soilings or earthings up, which have been frequently recommended in the *Register*, and reiterated from various parts of the kingdom, and which are also in almost universal practice. This bold innovation on general management, I am aware, is calculated to excite the ire of many experienced gardeners, and to array against me a host of captious correspondents; yet no gauntlet is thrown, neither will there be any shrinking from temperate discussion. It will be asked, are we to cease blanching? Are we to grow Celery as stray and wild as a solitary Fern on inaccessible rocks? To such, and all synonymous questions, the most decided negative is given. The process of blanching, whilst the plants are in a vigorous state of growth, may be accomplished in three weeks, but when it has nearly ceased to grow, it will require a longer time for blanching; and, therefore, when time or circumstances require,

let it be earthed up from twenty-eight to thirty-eight inches high at one time, taking care the plants are free from moisture, and the soil moderately dry. With respect to its growing stray and wild, it is admitted it would do so, were no precautionary measures taken, but in three or four weeks after planting on the trenches, it will be necessary to hoe and hand-weed it; on which occasion dress off every stray leaf and stem, gather the remainder in the hand, and pass a shred of matting, or of untwisted hemp round each root, precisely at the junction of the leaves and leaf-stalks, *not too tight*,—but sufficiently so to keep them in a proper upright positition, and also capable of admitting the successive shoots from the centre; which will strike rapidly, and in a few weeks render it necessary to cut away the original shred, and replace it by one of larger circumference; and the second shred will subsequently require slackening, or renewing, to give room for the increasing dimension of the plants.

"Thirdly—after having set out the rows, five feet asunder, for a final planting or crop, throw out a trench eighteen inches wide and twelve deep, laying the soil high in the centre, and sloping towards the trench, as a conductor of rain-water to the roots of the plants. Fill the trench thoroughly to the top—that is—twelve to thirteen inches deep with the aforementioned compost, taking care to leave it moderately light; and never tread it down with a heavy foot, if avoidable:—Just within, and on the centre range of the compost, insert the roots of the plants, with a ball of soil adhering to each, carefully arranging the numerous fibrous roots, and fixing erect with a light pressure at fifteen inches apart in the rows:—this done, give a moderate watering with soft water; and if a leaf flags, or a perceptible check in growth takes place,—say truly the work is bungly performed. In a short time the fibres will pour themselves like a flood into, through, and over the whole mass of compost, extracting the needful aliment for the plants, which being thus copiously supplied, shoot forth in proud luxuriance.

"On close observation, in three or four weeks after the final planting on the trenches, it will be perceived, that many minute fibres have emerged out from each root, and are skimming on the surface of the compost in quest of additional food; therefore suffer not the hoe to approach nearer than a foot to each plant, but weed with the hand if needful: and this being performed, *cover those young and tender fibres* close up to the stem of the plant with about two inches deep of the compost or other light earth, to nourish them and protect them from the too powerful avidity of the sun's rays; recollecting this is the only earthing, or soiling up that is to be applied until the final one for blanching.

"The four preceeding paragraphs contain the principal rules necessary to be adopted for the production of large Celery, and all the directions that have been, or may hereafter be given to produce large and fine Celery weighing twelve pounds and upwards each root, merely by the force of tillage in repeated doses, with the pretended advantage of strong soil, and coupled with regular earthings up every week or oftener, are purely fallacious.

"Slugs, grubs and worms are very apt to attack and spoil the appearance of Celery, which ought always to be sent to table clean and spotless as a lily. To prevent their approach, give a slight sprinkling of wood ashes, or of powdered charcoal from the pits, on each

side of the rows or trenches: and by using proper care, it may be produced as clean and peerless as the finest fruit.

"As regards the most suitable soil, the decidedly best Celery we ever saw taken up, weighed upwards of sixteen pounds, was clean, well blanched, and spotless as the most fastidious epicure could desire, not even a discoloured, or perforated leaf observable in the middle of October; and was produced on a sand soil with a sub-soil of very open coarse sand.

"The management of early and successional crops—the mode and time of watering—and many other minor and occasional attentions, which particular situations, seasons, and circumstances may and will require to be varied, will readily suggest themselves to practical and attentive men."

Important Facts to be observed in Rearing Stock.

[FROM THE NEW-ENGLAND FARMER]

Mr. Editor,—I have never seen in your work an account of M. Giron's experiments, which have brought forward some new and highly important laws, that regulate the form and sex of animals. A brief notice of them will be useful to all who are interested in improving stock.

M. Giron de Busareingues is an agriculturist in the South of France. His work contains two separate propositions, supported by experiments most numerous and satisfactory. The first is—that in animals mature age and perfect developement, the influence of the sexes on the external form *crosses* in generation, the male being more like the dam, and the female progeny more like the sire. The second is—that in regard to sex itself, the influence is *direct*, the sex of the progeny corresponding with that of the parent which had the strongest constitution, and was in soundest health at the time of union.

The first of these propositions is deduced from an observation of a vast number of cases which cannot be detailed in this brief notice. After remarking then that they are sufficiently strong to convince every one of the correctness of the inference, I will proceed to state a few facts by which this second proposition is supported by M. Giron.

His first remark was, that, flocks and studs, those females who were at the most vigorous age, generally produced females whether united to strong or weak subjects: whilst those females that had either not attained, or had passed the prime of life, produced males when united to prime subjects, and females, when united to very old males. To ascertain whether this discovery corresponded with general observation among practical farmers, M. G. made inquiries of the neighbouring agriculturists, who informed him that they had constantly remarked that when the male was young, and the female vigorous, the product of their union was female; while the contrary had as uniformly happened when the conditions were reversed.

In order to test this matter still further, M. Giron, announced, in 1825, to the agricultural meeting of Severac, that a part of his flock, already remarked, would give him, at the next *agnelage*, more females than males. The society nominated two commissioners to ascertain the fact, and it turned out that the proportion of males to females was 1000 to 1472.

At a subsequent meeting, M. Giron offered to effect the production of a majority of males or females in a given flock, at the choice of the society. Two flocks were immediately furnished by members of the society.

The first flock was divided into two equal parts without reference to age or constitution. The first part being supplied with very young rams gave a product of 30 males to 76 females: the second part being supplied with strong and vigorous rams four or five years old, gave a product of 55 males to 31 females.

The second flock was also divided into two sections, but with more regard to the other conditions referred to. The first section composed of strong sheep four or five years old, was sent into rich pasturage and visited by yearling rams; it produced 15 males and 25 females. The second sections, composed of feeble sheep under four and over five years of age, was placed in dry pasturage, and received two strong rams over three years old; the result was 26 males and 14 females. In both experiments it was observed that the lambs produced by the young rams were equal in appearance to those produced by the most vigorous.

The experiments were continued on other classes of animals, birds and insects, with the same results. In the poultry yard, *e. g.* where the preponderance of maturity and vigour was on the part of the hen, there resulted 725 males and 1000 females: and where the male parent was most vigorous and of ripest age, there resulted 1415 males and 1000 females. Among horses, his experiments were particulurly clear and conclusive.

It happened to be most profitable to M. Giron, to have more females than males. With a view to effect this he took care, in the year 1824, to furnish his mares good pasturage, and to give none to foal who had suckled the same year, or borne the year previous. "Elles ne furent presentées à l'étalon qu'apres qu'elles eurent donné des signes de chaleur." Five mares, thus prepared, produced five females; and of fifteen foals procured from 1824 to 1827, there were 13 females and 2 males. In accordance with the same law, it is generally true, I believe, that southern horses (particularly Arabian) produce most female colts when united to the more vigorous mares of a northern clime.

So far as M. Giron extends his comments to the human race, they are not within the design of this brief communication, which is intended for the practical benefit of farmers. This benefit may be easily and plainly deducible from the above statements so far as they relate to horses and poultry. Permit me to allude to the manner in which advantage may be taken of *both propositions* in rearing *horned cattle*.

Suppose you have a cow that is a remarkable milker, and wish to procure from her a progeny with the same excellence. Now the *common* way is, to send the cow to bull, and if she has a *heifer* calf, it is raised with high expectations, and the owner is invariably disappointed. The reason of this is, as we now see, that the heifer calf partakes of the external form and peculiar properties of the bull and not of the cow. Proceeding then on the principle developed by M. Giron, we should do as follows: send the cow, whose properties you value, to a bull of the ripest age and greatest vigour. The product will be a *bull-calf*, having the form and inherent properties of the mother, so far modified in their developements as the difference of sex required, but still inherently the same. This bull-calf should be carefully reared, and his female progeny will exhibit the form and properties of *his dam*.

So, also, if you have a bull of huge size, fine form, great strength, and other excellences, it will be in vain to expect similar form and properties in his immediate male progeny. But his heifer calves will inherit his properties, and transmit them to their male progeny. Thus must we be content to pass through one generation, and we shall probably be well rewarded for our patience and perseverance.

It is scarcely necessary to add that such patience is not necessary in rearing horses. If you wish to procure a colt of form and properties of a fine mare, send her to a vigorous horse, and the result will probably be a male, possessing the properties and form of the dam. On the other hand, if you wish a colt resembling a celebrated stud horse, you must send such a mare (either old or very young) as will be most likely to have, from this union, a female foal, for it is in this crossing of sexes we get the external form and properties we desire.

In conclusion, allow me to express the opinion that the incredulity that exists among farmers about the impossibily of propagating the qualities of animals, may arise from their want of knowledge of these laws. "I don't believe in your breed of horses," says Farmer A. "There's my neighbour B. has as fine an animal as ever stepped, that came of his old black mare that's not worth a pin." Now, if farmer A. had known as much as I wish to teach him by this paper, the fact he stated would not have led him to his skeptical conclusion. If the fine young animal was a female, it matters little what were the qualities of the sire, and so on.

Yours, &c. B. C.

Management of Colts.

[FROM GOODSELL'S GENESEE FARMER.]

Sir,—Having noticed among the selections in your useful paper, an article from the New-England Farmer, signed James Walker, describing his, and an excellent manner of breaking steers and colts, induces me to lay before you a different course of management with colts, which I have adopted for several years with perfect success.

I have experienced some difficulty with old horses being refractory, and baulky, in the harness, having formed a habit of becoming sulky, on the least emergency, and refusing to go *at all*, and have frequently witnessed the delays and troubles attendant on such habits, and the excessive beatings which the poor brutes are often subject to, for want of being properly managed at the beginning.

I, therefore, to avoid all such troubles, commence with the colt about one week old. I halter him and tie the halter around his dam's neck, and lead her for some minutes. After some feeble resistance the colt submits, being easily induced to lead by the side of the mother. I pursue this for some weeks, once a week, allowing a boy to ride the mare. In the mean time I hitch the colt to a firm post, which it will pull at, but to no effect; then handle him from head to foot, frequently coming up to him until he is satisfied that there is no unfriendly intention. When the colt is about the three month's old, and has acquired a good appetite, choosing a warm day, I hitch the mare and colt a little distance from each other, and after about two hours abstinence, I draw the milk from the dam, and present it to the colt, which he soon learns to drink. By repeating this a few times, he drinks readily, when the milk from cows, may be substituted for that of his dam. When weaned, this practice will be found beneficial, as the

loss of flesh may be prevented, and the colt kept in a growing condition. Colts thus practised will not refuse sour milk although it has become thick.

The benefit of this practice was fully demonstrated with a colt of mine, which at two years old, from unskilful castration, was reduced so low, that he was not able to rise alone, or receive any kind of food except milk, and not more than one pint of that at a time, as even that quantity in some instances produced almost fatal paroxisms which lasted several minutes. In this instance, a few gallons of milk saved his life, and he is now a valuable horse.

At two years old I bit my colts thoroughly, but never allow them to be treated harshly. Occasionally before they are three years old I put a harness on them, and lead them. I next put on a blind bridle, traces and whippletree, with a rope or chain attached to it, held by a man who pulls it gently as the colt inclines to draw, being careful not to stop him. I next put a well broken horse by his side, harness them together, and attach a double whipple tree, with as many men to hold it as is necessary to require all the colts exertions to draw them, letting the traces from the beginning play freely against his legs, so that he shall become familiar with them. I next attach the reins and take a whip, continuing yet to lead him, occasionally snapping the whip, with corresponding actions calculated to hasten his speed. The colt soon learns the use of the whip, and what is meant to be communicated by it, and hastens his speed accordingly. I next hitch the span to a lumber wagon, tying that end of the whippletree to which the old horse is hitched back, so as to keep it square, to prevent him from throwing the colt back by his superior strength. In this manner I drive them for sometime, occasionally stopping where there is a gentle ascent in the road, so that the wagon will move backward, and with gentle pulling upon the reins learn the colt to travel backwards, and by repeating it often in various places, he soon learns to comply in this respect with the wishes of the driver without contracting any refractory habits. I continue using him in this kind manner, being careful never to overload him, until his age and experience will justify putting him to heavy loads.

The best method with which I am acquainted, for breaking colts to the saddle, and on which I have practised with perfect success, is to take them from home in company with a horse, with which they are acquainted, there to get on and off from them, several times, until they submit to being mounted without resistance, then let the riders mount both the old horse and colt, the rider of the former leading the colt by the side of the horse. The colt will be disposed to keep company with the horse, and will soon learn that you wish him to go forward. Let the speed of the horse be increased a little, occasionally, and the colt will soon learn to increase his also, as he will be unwilling to be left alone, and will be inclined to follow the horse home.

I have in this manner succeeded extremely well with a colt of three years old, which at first could not be rode past bars, gates, or barns where he was acquainted.

By injudicious treatment, and requiring colts to perform that which they have never learned, the lives of riders are often in jeopardy; and by mal-treatment, they contract bad habits, which it is much easier to avoid, than correct after they have contracted them.

I am, Sir, yours, respectfully,

ALLEN T. LACY.

South Chili, November 25, 1833.

Herd's Grass or Salt Marsh.

[FROM THE FARMER'S REGISTER.]

In answer to inquiries made by a farmer in your 12th Number, on salt marsh and meadows, I can say for the last five years I have had several acres of such land well set with red top, or herds grass. The ground is subject to repeated overflowings, both spring and fall, and many times the tide water from the Sound has been so much impregnated with salt as to leave a white scale or scum of salted matter all over the earth, and on examination I have found it quite salt to the taste, but without its causing any apparent injury to the grass. Apprehending injury from these annual overflowings of the ground with salt water, I had the land the first year inclosed with an embankment to prevent inundation, and through the centre a three foot ditch was cut with a flood gate at its mouth to let off the fresh water not needed at low tide, and to keep out the salt water at high or storm tides. This answered very well while it lasted; but the first severe gale from the north-east swept away my dam, and the tide-water took complete possession of my meadow. To my disappointment and gratification, I discovered but slight injury to the grass, and in a few days it had a more deep blue and flourishing appearance than before.

The land, before sowing the grass, had been well broken up, and planted two years in corn—but without success—it being too wet and cold, and subject to bugs, for that crop. On preparing the land for the reception of the grass seed, it was laid up into beds of six feet wide, having a small water furrow between each, leading to the main ditch, that the water either from tide or rain, may be more readily conveyed off the ground. Equal proportions of timothy and herds, with half a pound of red clover seed was sown to the acre. The timothy has nearly disappeared, and no clover is to be seen, having been entirely overrun by the red top, or herds grass. The seed was sown the 1st of October.

I have the last year made a small trial of gama grass on such land, and have reason to believe it will succeed and produce an abundant crop of good hay. I find it best to set it on ridges two and a half feet between, and six inches distance on the ridge. The gama, I find, on the rotten shell and black sandy loam, to far exceed in rapidity of growth any grass in our part of the country. The seed should be sowed in the garden, kept clear of grass and weeds the first year, and transplanted the 1st of March in the meadow.

J. B. MARSH.

Beaufort Co. N. C. May, 1835.

Lactoline—Desiccated Milk.

[Translated for the Farmer's Register from the *Annales de l'Agriculture Francaise*, for February, 1835.]

In the sitting of the 9th of this month, the Academy of Sciences has heard a communication from M. Grimand, relating to a substance which he name *lactoline*, which, mixed with nine-tenths [nine times its quantity ?] of water, reproduces fresh milk. The substance is not injured by moisture or heat.

PART III.

MISCELLANEOUS INTELLIGENCE.

On Irrigating Gardens by tanks or ponds.—The garden of Thomas A. Knight, Esq. is supplied with water by springs, which rise in a more elevated situation, and thus afford him the means of making a small pond, from which he can cause water to flow over every part of the garden whenever he wishes. He thus irrigates his strawberry beds when in flower, and plants of other kinds, throughout the summer. A stream is caused to flow down the rows of celery, brocoli, &c. with very great advantage. But the most extensive and beneficial use made of it, is to water his late crop of peas. By this means the ill effects of mildew are almost wholly prevented, and the result is a good supply of peas throughout October. When water is delivered in the usual quantity from a watering pot, its effects for a short time are almost always beneficial; but if water be not continued regularly, injurious consequences frequently follow; for the roots of plants extend themselves most rapidly, wherever they find moisture and food; and if the surface alone be wetted, the roots extend themselves only superficially, and the plants consequently become more subject to injury from drought, than they would have been if no water had been given to them. When, on the contrary, the soil is irrigated in the manner above recommended, it is wetted to a great depth; and a single watering, once in eight or ten days, is, in almost all cases, fully sufficient.—*Trans. Hort. Soc. Part. 4, Hort. Reg.*

Remedy for Fruit Trees casting their Fruit.—It is well known that although some trees both of peach, apricot, plum, apple, &c. are well furnished with blossom buds, the blossoms often fail in their impregnation, and fall off; and when they are impregnated and set, they fall off at the stoning. Frequently, although they survive the stoning, they become prematurely ripe and fall off, and very few, if any, of the fruit attain maturity, while those which do ripen become vapid and have no flavour. These failures have been proved to arise from unwholesome food, a remedy for which may be found by the following method: Having selected a tree that is in good condition, and well furnished with blossom-buds, just as the blossoms are beginning to expand, take a potato-fork, and with it make holes all over the surface of the space occupied by the roots (which extends as far from the stem as the branches) at about eighteen inches apart, forcing in the fork to the full depth of the tines, and giving it a gentle heave, by pressing on the end of the handle, then, having dissolved some nitre in water, in the proportion of one ounce to three gallons of water, fill the holes with the solution. No manure must be given; but if, after the stoning of the fruit, the tree should appear unable to sustain its crop of fruit, the following preparation may be given, in the same manner as the nitre: To one gallon of blood add one gallon of water, and one ounce of potash; stir the mixture well, and let it stand for a week or ten days; then pour off the solution from the clot, and, mixing one gallon of this liquid with four gallons of water, give it to the trees as above. The remaining clot may be dissolved by adding to it one quart of slacked lime, and one gallon of water to one gallon of clot, but this solution must not be given to fruit trees, as it will produce the effect which the nitre is intended to remedy. It will, however, prove a good manure for the cabbage tribe, asparagus, celery, &c.—*Gard. Mag.*

Irish mode of obtaining early Cauliflowers.—Take your knife in one hand, and the plant when full grown in the other, cut upwards in a sloping direction, about two inches from the ground, till the blade reaches the middle of the stem. Then put a small bit of chip in the slit, to prevent the parts from uniting again, and raise the earth above the cut, pressing it very tightly round the plant, and treading it firmly to protect it from being broken by the wind. You may also make it more secure by tying the plant to a firm stake, or, which is still better, you may tie a strong shred of bass-mat round the wound, and thus secure the plant to a sufficient stake, which will make the raising of the earth unnecessary. By this method the plant will be ready for use seven or eight days sooner. Instead of lime, gypsum

may be used with much better effect, not only in this, but in other garden operations.—*Hort. Reg.*

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To have large Flowers on Spring Broccoli.—In the month of September, begin at one side of the Broccoli plot, and open a trench parallel to the planted row. Then take up the plants from that row, one by one, with a good ball to each, and if it be very large let it be reduced, and the roots trimmed. Let some of their under leaves also be taken off, and then lay the plants carefully in the new trench. Dig in the earth, and close it well, treading it firmly round the roots. Let the same operation be performed with respect to as many rows as you wish to transplant into the trenches to be vacated, placing them in a sloping direction. If possible, let the plot originally be laid out to face the south. The plants by receiving this check, will stand the frost better, and have larger flowers in the spring. —*Ibid.*

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Hops used in Tanning.—This may not be of much importance with us at present, so long as hemlock bark is abundant and cheap, but it can do us no harm to know, and in many places may be useful and important to know, that the roots and stalks of the common hop have recently been applied in England to the purposes of tanning leather, either alone or mixed with other vegetable substances which contain the tanning principle.

The mode in which it is used, is to grind it to a powder, and apply it in the same manner you would oak, hemlock or other other bark. We do not know the particulars, but presume that the stalks may be used after the hop is picked off. If this will do there may be a saving in the thing, and an additional profit to the hop grower. He can sell hops to the brewer, and the vine or stalk to the tanner, and thus the whole crop be entirely saved. It is a maxim of Divine origin that we should gather up the fragments that nothing be lost, and it certainly is one of no small moment to the farmer, whose gains must depend so much upon care, and the number of economical savings he can establish.—*Maine Far.*

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To keep Plums and Peaches ripe through the year.—Beat well up together equal quantities of honey and spring water; pour the mixture into an earthen vessel; put in the fruit all freshly gathered and cover them up quite close. When any of the fruit is taken out, wash it in cold water and it will be fit for immediate use.

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A Grain of Corn.—One grain of corn, dropped by accident on the land of Major Jacob Clark, of Durham, Mass. yielded this year, nine ears, with sixteen rows each, averaging 40 kernels to each row, and making the whole produce of a single grain about five thousand.

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American Champaigne.—The vine appears to be successfully cultivated for wine in the vicinity of Baltimore. Mr. G. Fitzhugh writes to the American that about 20,000 vines. principally the Herbemont, Lenoir, Catawaha, Bland, and Isabella, all natives, have been planted within the last four years. The American also acknowledges the present of a bottle of sparkling Herbemont, made in August, 1832, which "resembles champaigne in colour, flavour, and briskness, and is superior to much that is sold under the fascinating name of the French favourite." It is declared to be the pure juice of the native grape. The Burgundy and Champaigne districts of France are about latitude 47 and 48.

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Consumption of Food in London.—The annual consumption of oxen in London, is 150,000; calves, 50,000; sheep, 700,000; lambs, 250,000; hogs and pigs, 200,000; the total value of butcher's meat consumed in the year is estimated at 8,500,000*l.* There are 8,500 cargoes of fish, of 40 tons each, brought annually to Billingsgate, beside 20,000 tons by land carriage; 1,000,000 quarters of wheat; about 80,000*l.* in the value of poultry; 21,000,000lbs. of butter; 25,000,000lbs. of cheese; vegetables and spirits to the value of 1,000,000lbs.; 2,000,000 barrels of ale and porter of 36 gallons each; 11,000,000 gallons of spirits and compounds; 65,000 pipes of wine; and 7,900,000 gallons of milk, the produce of 9,600 cows, are annully consumed.

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Time for Painting Houses.—Repeated experiments show that paint put on houses late in autumn, or in winter, will last far longer than that put on in warm weather. In cold weather the oil dries on the clapboards, and with other ingredients forms a durable body, but in hot weather the boards absorb the oil, and what remains on the surface has but little substance.—*Gen. Far.*

MONTHLY CALENDAR
OF
HORTICULTURE AND FLORICULTURE
FOR JULY.

VEGETABLE GARDEN.

Sow bush or snap Beans, the best kinds for this month are the early ones, such as white negro and yellow dwarfs. They should be planted in ridges about 5 inches high and 18 inches apart; should the weather be very dry, it would be advisable to steep them 6 or 8 hours in rain water, and also to water the drills previous to inserting the seed.

Cabbage Plants may now be set out. The beds ought to be well manured, and the plants set 2 feet apart. You may still continue to sow some seed, and if the weather prove favourable, they may be put out in 6 weeks.

Cauliflower and Broccoli Plants.—These must be planted in a highly manured piece of ground; the former must be planted about 2 and a half feet apart, in rows, and the latter in rows of 3 feet; in dry weather they must be regularly watered, until well rooted. The young plants, if possible, should be sheltered from the sun. The seed of these plants may yet be sowed, and should be protected by bushes from the intense heat of the sun; a moderate watering, should the weather prove dry, will be of great service both before and after they come up.

Leeks sown in the beginning of last month may now be set out. You must select the largest plants, and prepare them for planting, by cutting off the ends of the roots, and likewise the leaves. They should be planted in a moderately manured piece of ground about 6 or 7 inches apart from each other, and watered in the evening until they take root.

Onions sown in the spring are now fit to be taken up, leave about 4 inches of the stalk to each root. Spread them out on some dry spot to harden for 10 or 12 days, frequently turning them.

Carrots and Parsnips.—These may still be sown with some prospect of success, if care be taken to prevent the sun from scalding their roots, and the heavy rains from beating them down; this may be effected by covering them as occasion may require with the bushes.

Endive.—This may be sown the latter end of the month, in an open place, not too thick; should the weather be dry, water the seed and the young plants, as may be necessary.

Turnips.—Sow the seed in an open situation, in fresh dug ground, as regular as possible, and not too thick. The soil must be well dug and soft, and divided into beds from 4 to 10 feet wide, allowing a sufficient space between, to attend to the growth. It would be better if the beds have a little declivity, so as to allow the superabundance of rain to pass off.

Lettuces.—The Silesia and curled coss are the best species to sow now, and may be sown twice in the month.

Celery.—Make trenches about a foot broad, 6 inches deep, and 3 feet apart; put in the bottom of them some well rotted manure, and dig it in; select the best plants from the seed bed, trim the ends of the roots, and remove imperfect leaves from the top; plant them in a row along the middle of the trench, 5 or 6 inches asunder, and give them repeated and good waterings every evening in dry weather, until they have become well rooted.

Radishes.—Salmon, short top, and turnip Radishes, may yet be sown, but from the uncertainty of the weather in this month, the crop will be uncertain.

Small Salading, such as Mustard, Cresses, Rape, &c. may be sown once a week for a succession.

Spinach may be sown the latter end of this month, which will be fit for use in the autumn. The round seeded or broad leaved, is the best to sow at this season. A piece of ground must be well dug, and the surface laid even, and then divided into beds of 4 feet wide; draw four drills on each bed; scatter the seed thinly on them; draw over the hoe very lightly, and then rake the surface even. In dry weather water well both before and after the seed come up.

FRUIT GARDEN.

Apricots.—On the 12th of June we were presented with five Apricots, the produce of a gentleman's garden in this city. They were the first we had seen, and were very fine; and much sooner than they are in general.

Summer pruning of Peach, Nectarine and Apricot Trees becomes now necessary for the improvement of your fruit, the generality of the two former of which are now about half ripe, and the latter nearly or wholly expended This operation must be done early in the month, if it has been hitherto neglected. A great advantage is derived from early summer prunning, in permitting the sun and air and gentle showers to have proper access to the young fruit, and in ripening the shoots perfectly for the next year's bearing. Every shoot at this time must be left at full length; and those produced since the last month ought to be removed. In very dry weather, the trees should be plentifully watered, as at this season there is a heavy draught upon the soil for nourishment, and water is the principal. About the time the fruit appears to be ripening, say one week before they ripen, take away such small branches and thick foliage, or shade the fruit, so as to admit the full power of the sun upon the fruit, this will not only improve its colour, but greatly increase its flavour.

FLOWER DEPARTMENT.

Not much is to be done this month in this department, except keeping the beds and walks clear of grass and weeds, and watering according to the season. Several handsome annuals are now in blossom; such as varieties of Balsam, China Asters, Coreopsis, &c.

Roses may now be budded; the best stalks to bud on are those of the daily rose they live longer, and are not so likely to decay as those of the annual or spring rose. Varieties of the Moss Rose budded upon the branches of the daily, make a very ornamental bush. Attention to watering is very important this month.

Geraniums, and most pot plants, require to be protected from the intense heat of the sun.

FLOWERS IN BLOOM.

The following beautiful flowers bloomed in Mr. Michel's Garden, in St. Philip's Street; through the politeness of that gentleman, we are enabled to lay before our readers his successful mode of cultivating them.

Heliotropium Peruvianum, L. *Heliotrop. Artificial Syst:* Pentan: Monog: *Natural*, do. Borage tribe. A native of Peru, thrives best in a rich light soil, requires a warm situation and much watering in summer; is best replanted in spring and August, and propagated by cuttings, which root freely. (Pot small.)

Agapanthus Umbellatus.—*Herit: (Crinum Africanum, L.)* A native of the Cape-of-Good-Hope. *Artific: Syst:* Hexand. Monog: *Natural*, Liliaceae. Thrives best in loam mixed with a good deal of sand, and some rotten dung; requires large pots; much watering during summer; almost none in winter; is propagated by suckers, which are carefully taken off immediately after the flowers have withered. It has to be annually replanted.

Volkamera Fragrans.—*Ventenat. (V. japonica*, Jacqs. Clerodendron fragrans Hortul.) *Artificial Syst.* Didynamia Angiospermia. *Natural, Labiatæ Verbenaceæ.* A native of China or Japan. Thrives best in a loam or peat; is propagated by cuttings, which root freely; and ought to be replanted in fall. (Middle sized pots.)

Clethra Odora, is no authentic species; very likely only a variety of the *Clethra alnifolia*, produced by cultivation.